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Tardy Realism

WITHIN the last thirty days a leading member of each of the two major parties has urged the readmission of Spain to the family of nations. James A. Farley, former Chairman of the Democratic National Committee, and Republican Senator Chan Gurney, Chairman of the Senate Armed Services Committee, both asked that we reestablish normal relations with Spain and welcome her back to the fellowship of the European community to which America is now granting billions in aid.

It may be recalled that the House of Representatives in approving this aid last winter specifically requested the inclusion of Spain, a purpose from which Congress was dissuaded by the State Department on the ground that it might have a bad effect on the "liberal" beneficiaries of E.C.A. in western Europe.

What is the origin of this boycott? It dates from the trouncing which Franco gave the Republican forces in the Spanish civil war. The Republican army in Spain was a ruthless, communist force, trained, equipped and directed by the Kremlin. It was a pre-war Russian attempt on precisely the same pattern as others in Poland, Rumania, Bulgaria, Yugoslavia, Czechoslovakia, and currently Greece. If the western powers had had the realism and courage of El Caudillo, Russia might not be the imminent threat to world peace that she is today.

Communists and fellow-travelers have never forgiven Franco for spoiling this noble attempt to establish a Peoples Government in Spain and bring to the Iberian Peninsula that peculiar brand of freedom and progress which the satellite belt now enjoys.

The dictatorship of Franco is deplored by people who are able to clasp Dimitroff, the Bulgarian; Pauker, the Rumanian; Tito, the Yugoslav; Stalin, the Georgian, to their bosoms without embarrassment. The oppression of the Spaniards brings tears to the eyes of "liberals" who view 14,000,000 wretched slaves in Red labor camps with complete complacence.

Is it not high time for us to look about the world and determine who, in the grim event of war, will be with us and who against us? There can be no doubt about the position of Spain. Unless she fights on our side and helps us to victory, she will, in the event of defeat, experience a blood bath that will make the Moscow purges seem like a Sunday school picnic. Her clear interest makes Spain a natural ally. Furthermore, she has what soldiers call the most vigorous army in western Europe, overwhelmingly Catholic, with bitter memories of communist excesses during the civil war, led by officers about whose loyalty there is infinitely less question than there is about the personnel in our own State Department.

Spain occupies a strategic position at the western end of the Mediterranean. Across her northern border run the Pyrenees, a natural barrier within which the power of the western world may be mobilized if and when the Red tide overwhelms the weaker, intermediate ramparts of Europe.

The Russians have left us no option but to prepare our defenses. The time has come when this country ought to take counsel with its soldiers instead of listening to myopic intellectuals who cannot tell the difference between deliberate treason and enlightened liberalism.

Joseph Stagg Lawrence

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► Flat statements that there will be no steel price increases for some time are mostly wishful thinking. If costs keep going up--there will be increases. The increase in hot rolled sheet and strip extras by one company is a price increase. This may touch off similar action by other firms. Increased freight rates and higher raw material costs are being watched closely and don't forget--the recent increase in aluminum prices came only a few months after a previous raise that was supposed to take care of labor and raw material costs.

► Recent research in this country has suggested that magnesium may be superior to cerium for developing nodular graphite structures in cast iron. Best alloy to date appears to be a magnesium-copper with more than 50 pct copper.

A ladle addition of 1.25 pct of 50 pct nickel-50 pct magnesium alloy followed by 0.4 pct silicon is expected to give 95,000 psi tensile strength and 223 Brinell hardness. Magnesium was found to be effective in the low carbon iron while cerium appears to be effective only in hypereutectic iron.

► The railroads' seeming intention to charge what the traffic will bear has steel producers groaning, "oh, my aching back!" The proposed rate increases, up to 13 pct now, if granted, will bear heavily on coal, coke and ore movements and raise steelmakers' costs materially.

► The variety of parts that Signal Corps depots had to stock during wartime was a serious supply weakness. Radio tubes alone were a major problem. The Transitor which is now under development is designed to replace many radio tubes. The Services will be among the first to try this new device--a metal cylinder, less than an inch long and thinner than a pencil.

► Foreign made low carbon billets suitable for making concrete reenforcing bars and similar items are being offered at $100 a net ton f.o.b. New Orleans. At the last check no consumers had bought any of the tonnage--but they were sorely tempted to do so.

► While several of the nation's biggest steel companies report serious shipping tangles because of a shortage of freight cars, the railroads last month ordered less than a tenth of the number of cars that they received from the builders.

► Problems of financing lurk behind some of the beneficiation projects on the Mesabi Range. For the most part, iron ore companies are opposed to government financing in any form. On the other hand, most of the companies that are actively planning beneficiation projects would probably have no trouble in raising the necessary funds from other sources--including public participation.

► The furor over the voluntary allocations program is unfair to the steel industry. Some steel men want no interference at all--but they are not in the majority. There are others who will assimilate such a program if it does not go too far. Steel officials do not want priorities because they know that they can quickly fill any defense orders that are laid at their doors. Furthermore, priority systems degenerate and finally wind up as a full dressed government allocation program with all steel distribution taken out of the hands of the steel firms.

► Following a systematic and carefully planned program beginning in January, engineers of a large steel company have found that the use of oxygen during meltdown and refining will save from 1 to 1½ hr per heat.

This company also has found that the proper preparation and segregation of light scrap that will permit charging 80 boxes instead of 200 boxes per heat results in a saving of from 1½ to 2½ hr in charging time.

► Steel sales executives are beginning to think about training salesmen to sell. Many employ men who have never in their lives asked a customer for a carbon steel order--for over 6 years they haven't been allowed to.

► Lake Superior iron ore shippers will have moved about 84 million gross tons of ore by the close of the current season, according to present estimates. Boat movements will approximate 82 million tons--all-rail, about 2 million tons.

Ceramics for Aircraft

AN experimental ceramic rocket nozzle and housing after test firing for 30 sec. are shown at the left. The nozzle has a carbon bonded silicon carbide lining. On the opposite page is an experimental ceramic nozzle blade and retainer clip for a jet engine. The blade is made hollow to resist heat shock. Clip just holds the vane in place and is made of ordinary stainless steel. Ceramic blade itself is 2½ in. wide from leading to trailing edge and 4 in. long.

IT is axiomatic that any heat engine will operate at greater efficiency if it can be built to withstand higher operating temperatures. This consideration is obviously of importance in the design of aircraft power plants where even the greatest degree of efficiency so far attained is somewhat less than the optimum.

Foreseeing the trend toward higher and higher operating temperatures and the end of usefulness of the high temperature, hard-to-fabricate metal alloys made of critical raw materials, a high temperature materials program was initiated by the Air Force. In June, 1943, under contract to the Air Materiel Command, Wright Field, the ceramic department of the University of Illinois inaugurated a program of research and development on ceramic materials for application in the heat zones of aircraft power plants.

Since that time, the program has expanded to include many other educational institutions, including Ohio State University Research Foundation, Pennsylvania State College, Battelle Memorial Institute, Rutgers University, New York State College of Ceramics, and Armour Research Foundation, all closely integrated and operating under contract with the Air Materiel Command. Other branches of the Armed Forces such as the Navy Department Bureau of Aeronautics, government agencies, e.g., the National Advisory Committee for Aeronautics and the National Bureau of Standards, as well as many large corporations, are engaged in the task of developing materials of "unlimited" refractoriness.

Essentially, a new branch of ceramics is being created. While the work may be said to fall in the category of super-refractories, most of the development in the past has been toward the goal of reducing firing temperatures, to produce glassy bonds and glass, with as little heat work as possible. A new conception of ceramics may emerge; not only are novel methods of application and fabrication being investigated, but unusual and heretofore untried materials such as metal-bonded ceramics and ceramics of an entirely crystalline nature are being examined rigorously.

Ceramics, as applied to aircraft power plant problems, may be divided into two broad divisions; structural bodies, and protective coatings for metals.

The first classification includes supercharger buckets, turbine blading, exhaust nozzles, liners for expendable and recoverable rockets and guided missiles. Most of this work has been directed toward the less highly stressed parts; for example, flame tubes, nozzle diaphragms and stator blades. While some effort has been expended on other components such as rotating turbine wheels and blades, these dynamic parts are stressed in a manner usually considered outside the realm of ceramics. Nevertheless, studies are being made of the theoretical mechanics of brittle materials with the view of possible design to eliminate this limitation.

In the category of body compositions, a wide variety of materials has been tested and evaluated. These have included carbon; clay- and pitch-bonded graphite, similar to the composition used for metallurgical crucibles; carbides and nitrides; oxides, such as beryllia and zirconia; combinations and extensions of known refractory bodies, such as specially compounded porcelains and spinels; plaster, which converts to

Power Plants

By JOHN M. NEFF
Armour Research Foundation,
Illinois Institute of Technology, Chicago

In an effort to adapt ordinary ceramic materials to high temperature applications, the Armour Research Foundation is investigating a method for producing protective ceramic coatings for metals. The technique, which embraces such oxide systems as sodium borate, calcium borate and barium borate with, as a third member, zirconia, titania, alumina and chromium oxide, is described in this article. The author also reveals that the use of critical materials such as beryllium and tungsten is not contemplated, with attention being directed instead to more plentiful raw materials.

highly refractory calcium oxide when subjected to intense heat; and metal bonded ceramic bodies variously called cermets and ceramels. These coined words are current terminology used in describing bodies in which a skeleton or framework of some high melting point metal such as chromium, surrounds and bonds a refractory oxide such as alumina.

Coatings for metals, the second division in the application of ceramic materials, has received concentrated attention. It is obvious that one way to extend the temperature range and the resistance to chemical attack of an existing alloy is to provide it with a protective coating. This coating must, of course, be sufficiently refractory to withstand service conditions; it must have high resistance to chipping and cracking under repeated thermal shocks; and it must be resistant to corrosion and erosion by hot gases and fluids. In addition to these requirements, it should be capable of easy application to complex shapes.

As the gas turbine power plant is composed largely of sheet metal parts, the application of a porcelain enamel to protect some of the heat zones in this engine seemed an obvious starting point. Working along more or less conventional lines of base coat and top coat application, some excellent enamels have been developed. One disadvantage in the use of the base coat, cover coat type of enamel is thickness which must be applied to insure complete protection. The relatively heavy combination coating has low resistance to heat shock, comparatively poor adherence, and contributes to the weight of the unit. Coating thickness generally applied ranges from about 2 to 3 mm.

Another limitation to the use of special enamels compounded along conventional lines is the maximum temperature that the metal or alloy to which the coating is to be applied will withstand without excessive warpage or cracking. Obviously, a ceramic enamel having a maturing point of 2000°F cannot be applied to metal with a softening point of 1800°F. Further, ceramic enamels usually have a softening or

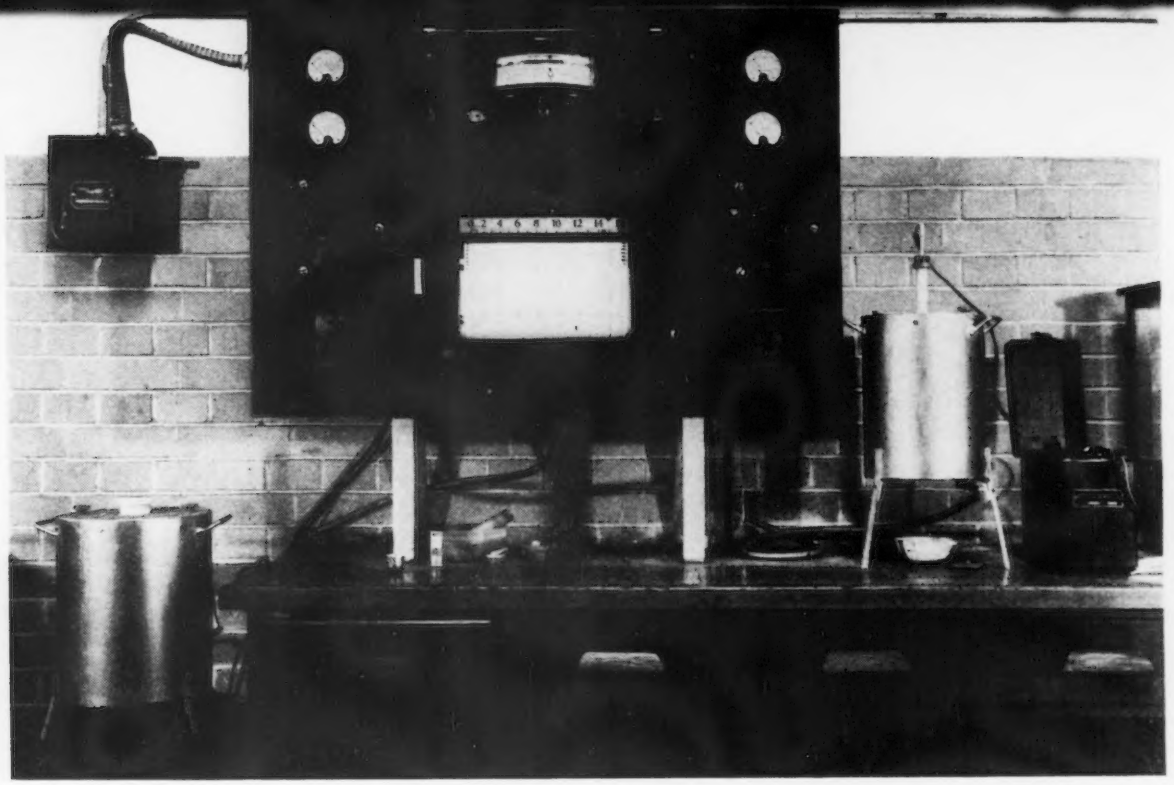

FIG. 1—The equipment in use at the Armour Research Foundation for investigating methods of producing protective ceramic coatings for metals.

creep point considerably below their maturing temperatures.

In spite of these obstacles, some excellent protective coatings have been developed. In addition to protective coatings for sheet metal, coatings have been applied to precision-cast supercharger buckets, which not only reduced corrosion and erosion, but helped dampen vibration. Ceramic paint has been developed which reduces visible light from exhaust manifolds; copper and molybdenum have been coated successfully with ceramic compositions to prevent or reduce oxidation. It has been reported that the life of some engines has been increased 100 pct based on torque stand tests.

Attempts have been made to coat alloys by spraying refractory materials through a flame directed on the metal, somewhat in the manner of the familiar Metallizing process. Another agency has been investigating a procedure involving the alloying of the metallic constituent of a cermet or ceramel with the surface of the metal to which it is applied. Impregnation of the surface of alloys with refractory oxides through pressure has been explored.

One of the more novel theories of producing a protective ceramic coating for metals is being pursued by Armour Research Foundation under contract with the Air Materiel Command. This research program involves the study of ternary and quaternary ceramic oxide systems in search of a glass composition which will fuse to a homogeneous mass at a temperature within the normal temperature range of ceramic enamels. The coating is to be applied in either of the two conventional ways, i.e., by sifting the dry material onto the heated metal part, or by dipping the object in a slip or slurry of the ceramic composition.

After the unfired ceramic coating has been applied, the metal object is to be subjected to sufficient heat to cause the ceramic material to fuse to a smooth, adherent coating, in the usual manner of porcelain enamels. The enameled object then will be heat treated or annealed, causing the glass coating to separate into two continuous, but mutually immiscible, phases. One of these phases should be more soluble than the second, so that it may be leached out of the glass structure with acid, leaving the second less soluble, more refractory glass in place on the metal. A third heat treatment, or perhaps service conditions, should cause the vesicular glassy residue to fuse to a smooth, thin, impervious, highly refractory protective coating.

Essentially, the process described is very similar to that involved in the manufacture of Vycor, a heat resistant glass* fabricated by Corning Glass Works. Here a borosilicate glass is melted in a tank, from which it is drawn to form beakers, flasks, crucibles and other chemical ware. After the ware has been molded, it is annealed to cause separation of the glass into two distinct immiscible phases. Sulphuric or hydrochloric acid is used to dissolve out the more

** Patent No. 2,215,039 and others.*

soluble glass, leaving a porous structure composed largely of a highly silicious glass in the original form of the object. Reheating causes the silica glass to soften slightly, well below its melting point, converting the cellular structure to a nonporous, vitreous condition.

So far as could be determined, no information was available on systems in which the silica was replaced with other more refractory oxides such as zirconia, titania, alumina, etc. Accordingly, research work was instigated on such oxide systems as the sodium borate, calcium borate and barium borate with, as a third member, zirconia, titania, alumina and chromium oxide.

The apparatus used and the methods followed are more or less standard procedures in mineralogical research. The raw materials to supply the oxide requirements of a formula are fused in a platinum crucible heated in a platinum wound resistance furnace. After cooling, the fused glass is removed from the crucible and crushed in an agate mortar, to pass through a 100 mesh screen. A small sample, usually about 0.1 g of the powdered material is wrapped in platinum foil and suspended in the heat zone of a second platinum-wound resistance furnace.

The second heat treatment is carried on at a given temperature and for a predetermined length of time, at the expiration of which the foil enclosed sample is caused to drop through the furnace into a pool of mercury, thus effecting a rapid quench. The method of heating and quenching provides a sample which, at room temperature and in a solid state, gives a very close approximation of the mineralogical aspect of the melt at elevated temperatures. Thus, if immiscibility of two liquid phases has developed, or if some compound has a tendency to crystallize out of the liquid, the polarizing microscope will divulge the phenomenon in the quenched sample. This procedure is used widely in studying phase relationships and in developing phase diagrams for ceramists.

Fig. 1 is a view of the equipment in use for this purpose at Armour Research Foundation. To the left of the panel and below bench level is the furnace in which the raw materials are fused. This furnace was constructed by winding a platinum alloy wire on an alundum tube, coating the coil with alundum cement and insulating the unit with powdered magnesium oxide contained in metal shell. A transite cover and bottom completed the assembly. This furnace is controlled by means of a platinum rhodium thermocouple and the indicating instrument at the top of the panel.

The quenching furnace, to the right of the panel, is of similar construction, except that it is provided with a high refractory porcelain tube inside the coil form, extending completely through the furnace. The recording instrument in the lower portion of the panel is connected to this unit.

Fig. 2 shows details of the specimen holder, with a specimen in place. This assembly is inserted into the inner tube of the quenching furnace and, after the desired heat treatment has been accomplished, the fine wire supporting the ceramic ring and specimen is fused by impressing a suitable electric potential on the two heavy platinum wires extending through the top of the supecimen holder stem. The ceramic ring and specimen then fall through the specimen tube and are quenched in a container of mercury beneath the bottom opening of the furnace.

The sample is recovered from the foil envelope and examined under a petrographic microscope as previously mentioned.

Several ternary and quaternary oxide systems have been examined and, although the program is by no means completed, there have been many indications that the original theory is feasible. Glass-forming ceramic oxides have been found, which, under controlled conditions, may be caused to separate into the desired immiscible phases. Furthermore, it has been determined that these separate, continuous phases display different degrees of solubility in leaching agents.

It is intended to continue research on this project, particularly in fields which do not involve critical materials. The desired end is a protective coating made from plentiful raw materials, which will not only increase the life of present alloys, but make possible the use of cheaper and more easily fabricated metals.

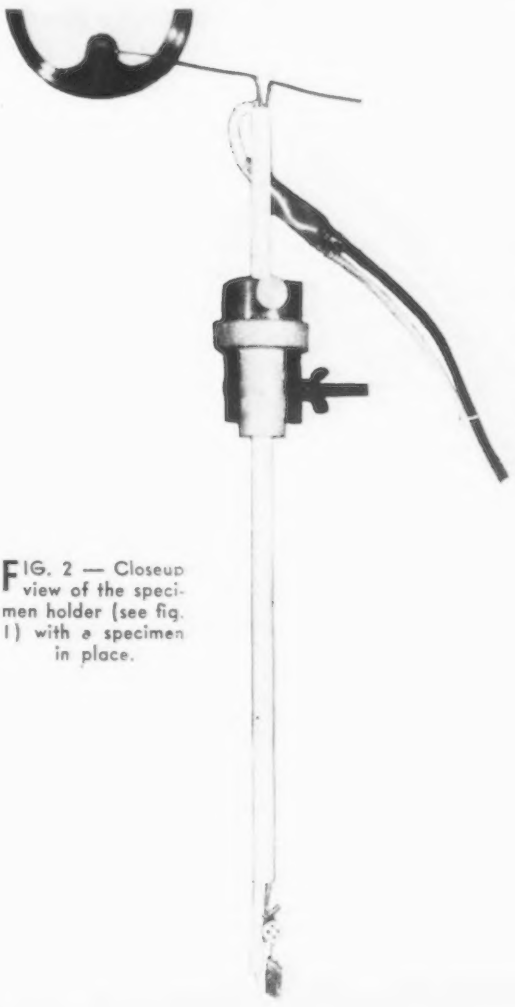

FIG. 2 — Closeup view of the specimen holder (see fig. 1) with a specimen in place.

New Steel Features High

By PETER PAYSON and A. E. NEHRENBERG
Assistant Director of Research and Supervisor Research Laboratory, respectively
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Harrison, N. J.

IT has been axiomatic that hard steels are brittle and soft steels are tough, and that the toughness of steels is generally inversely proportional to the hardness. Because of this, engineers have not used steels at their maximum strengths for fear that the low toughness of the steel would cause premature failure in structures subject to impact loading, or in structures containing notches, even though the load were static. It has been the practice to harden steel and then to temper it back appreciably at a sacrifice of strength, in order to gain toughness.

The degree of toughness which is considered adequate is not easy to define, but probably most engineers would agree that about 25 or 30 ft-lb resistance to fracture as measured in a V-notch Izod test piece would be sufficient assurance against failure of most structures. A number of publications[1-6] have shown that heat-treated steels have a lower V-notch Izod value than 25 ft-lb when they have a hardness over about 42 Rc, that is, a tensile strength over about 190,000 psi.

Yet early in 1945, one of the large aircraft manufacturers made a request for a low alloy steel which as heat treated in sections up to about ½ in. in thickness would have a tensile strength of about 230,000 psi and a minimum Izod value of 30 ft-lb. The only basis for the assumption that such a steel was possible, in view of the existing data to the contrary, was the fact that such a combination of properties was occasionally found in a steel made to an old British Standard Specification of Aircraft Material, 2S28, namely:

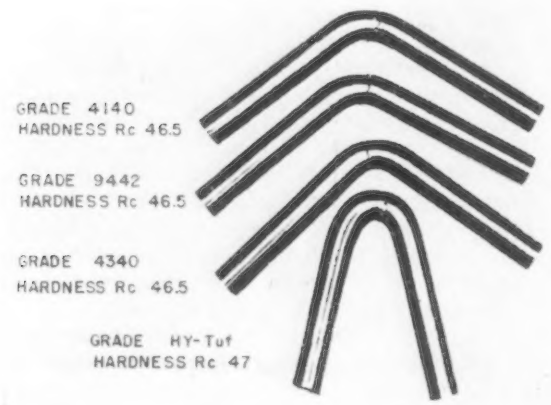
C	Mn	Si	Ni	Cr	V	W	Mo
0.25	0.35	0.30	3.75	1.00	0.25	1.00	0.65
0.32	0.60	max	4.25	1.50	max	max	max

when hardened by an air cool from 1500°F and tempered no higher than 480°F. The desired properties could not be obtained consistently in this high nickel-chromium steel, and this steel was unsatisfactory also because it was difficult to anneal.

The data on the modified 3330 steel indicated that the mechanical properties of tempered martensite might not be altogether independent of the composition of the steel. Furthermore, some data obtained by the authors on chisel steels of 0.45 to 0.60 pct C with low alloy content treated to about 56 Rc indicated that there were appreciable differences in notch impact among the steels, again refuting the published data on the consistent relationship between hardness and notch impact. Another example of the fact that composition may affect the mechanical properties of tempered martensite was given in U. S. Patent 2354147 issued to Howard Scott in 1944. This showed that steels of about 1.0 pct with high percentages of silicon and molybdenum had much higher "bending strength" at a hardness of 64 Rc than other steels at the same hardness.

These few facts which appeared to be contrary to the generalizations made in the literature proved sufficient inducement to start a project to try to meet the aircraft manufacturer's requirements. Since the chisel steel and the Scott steel referred to above contained fairly high silicon, it was assumed that high silicon might have a beneficial effect on the toughness of tempered martensite and therefore silicon was made an essential element in the first experimental steels in this project.

FIG. 1—HY-Tuf compared with conventional steels in slow bend of ⅞ in. rounds heat treated to 47 Rc.



Strength and High Toughness

A new steel called HY-Tuf, containing nickel, manganese, silicon and molybdenum as alloying elements, and possessing low notch sensitivity at relatively high hardness is described herein. The notch impact, notch tensile and notch fatigue properties of this steel are compared with construction steels in this, the first part of a two-part article, all steels having been heat treated to a tensile strength of about 235,000 psi. Data are also given in the comparative study showing the influence of testing temperature and tempering temperature on the mechanical properties of HY-Tuf.

Obviously, a carbon content of 0.25 to 0.30 pct was required for a tensile strength of 230,000 psi. A higher carbon content was undesirable since this would limit the weldability of the steel. To develop in such a low carbon steel a martensitic structure free from ferrite it was necessary to add alloying elements to the steel which would raise its hardenability sufficiently to suppress the rejection of ferrite under the conditions of cooling encountered in the usual heat treating procedures. Additions of manganese, nickel, chromium and molybdenum were therefore tried in varying amounts in the 0.30 C, 1.5 Si base analysis. Fortunately, encouraging results were obtained in the very first steels that were made. Eventually, after a series of logical changes indicated by the experimental results, an optimum composition was reached which adequately and consistently met the requirements originally set up, and which is now a commercial steel. The properties of this unusual steel which has been named HY-Tuf (Patent No. 2,447,089 dated Aug. 17, 1948) are enumerated below. HY-Tuf is a copyrighted trademark of Crucible Steel Co.

Mechanical Properties of HY-Tuf

Notch Impact: The average composition of the steel is as follows: 0.25 C, 1.30 Mn, 1.50 Si, 1.80 Ni and 0.40 Mo. When heat treated by an oil quench from 1575° to 1600°F and a temper at 550°F the mechanical properties of the steel are as follows:

0.2 Pct Yield Strength, Psi	193,000
Tensile Strength, Psi	234,000
Elong. in 2 in., Pct	13.1
Reduction of Area, Pct	49.7
V-notch Izod at 70°F, Ft-lb	31
V-notch Izod at —40°F, Ft-lb	25
Rockwell C Hardness	46.5

That such properties are unusual becomes evident when data obtained in the author's laboratory for this new steel are compared with published results of conventional steels as shown in tables I and II.

As will be shown subsequently, the new steel has mechanical properties not much different from those of conventional steels when compared at hardnesses under about 42 Rc or tensile strengths under about 190,000 psi, but at higher levels of hardness, or tensile strength, HY-Tuf as shown in tables I and II is not only distinctly superior in Izod, but also is generally superior in ductility as measured by elongation and reduction of area in the static tensile test, as well as by elongation in the impact tensile test. A comparison of the new steel with conventional steels in a slow bend test of ⅞ in. rd bars heat treated to 47 Rc is shown in fig. 1.

It will be noted in table II that HY-Tuf has a

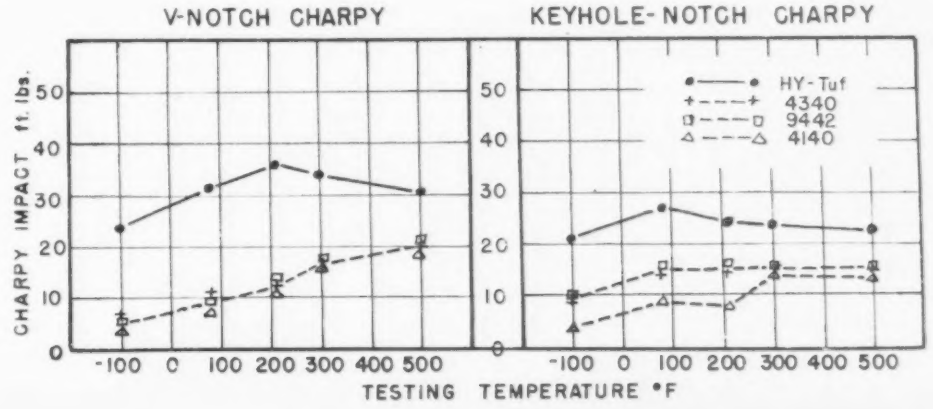


FIG. 2—Effect of testing temperature on the notch impact values of HY-Tuf and conventional steels heat treated to 47 Rc.

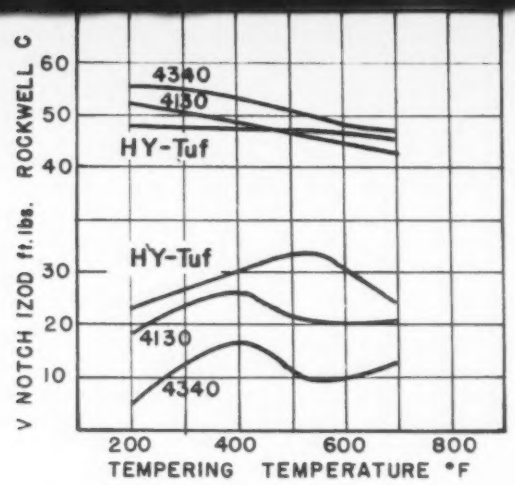


FIG. 3—Effect of tempering temperature on room temperature Izod values of HY-Tuf quenched in oil from 1600°F; 4130 quenched in water from 1600°F; and 4340 quenched in oil from 1500°F.

lower impact value for the keyhole Charpy than for the V-notch Izod, whereas the reverse is true for conventional steels. This is quite significant because it means that the new steel is much less sensitive to a notch at these high strength levels than ordinary steels.

In the conventional V-notch Izod and keyhole-notch Charpy test pieces, the radius at the base of the notch is 0.010 in. for the Izod and 0.039 in. for the Charpy, and the section back of the notch is 0.124 sq in. for the Izod and 0.078 sq in. for the Charpy. If steels were not sensitive to notch effects, the energy required to break the test-piece should be directly proportional to the cross-section back of the notch (for steel of a given hardness); however, most hardened steels are sensitive to notches and generally the sharper the notch, the lower the energy required to break the test piece. A measure of notch sensitivity is the difference between the ratio of the energy required to break the Izod test piece to that required to break the Charpy test piece, and the ratio of the respective cross-sections; or, more simply, the higher the ratio of Izod to Charpy, the lower the notch sensitivity. It is clear from a glance at table II that at a hardness of 45 to 47.5 Rc HY-Tuf is much less notch sensitive than conventional steels at this same hardness level.

Another test of notch sensitivity is the comparison of double-width v. single-width keyhole Charpy pieces as described by Hoyt.[8] If the steel is not sensitive to notch effects, the double-width test piece requires twice the energy to break it as the standard-width test piece.* The data in table III show that the new steel does require double the energy to break the double-width test piece not only at room temperature, but at —40°F as well, when it is tempered at 550°F; but is somewhat notch sensitive at —40°F when tempered at 400°F.

** On the other hand, if the steel is notch sensitive, the double-width test piece will require less than twice the energy and may break with even a lower energy impact than the single width test piece.*

Although the steel as tempered at 400°F shows some notch sensitivity when it is tested at —40°F, the steel as tempered at 550°F is fairly insensitive to notch effects down to about —100°F, as shown in table IV.

The indication from the data just discussed is that the transition temperature of the new steel at a hardness of about 47 Rc is well below room temperature. To confirm this, V-notch and keyhole-notch Charpy pieces of HY-Tuf, together

TABLE I

Comparison of Mechanical Properties of HY-Tuf, with Standard Gear Steels at a Hardness of 475 Brinell[7]

STEEL	Temper., °F	Yield Point, psi	Tensile Strength, psi	El. in 2 in., Pct	R.A., Pct	Izod, Ft-lb
Hy-Tuf	400	183,000	239,000	14	47	33
8645	650	210,000	235,000	11	40	12
3145	500	218,000	245,000	8	28	5
3250	600	214,000	243,000	9	37	8
2345	575	220,000	240,000	13	40	9
4640	550	218,000	238,000	11	43	14
4340	690	222,000	242,000	12	45	14

TABLE II

Comparison of Impact Data of HY-Tuf, With Published Data of Standard Aircraft Steels[5]

STEEL	Temp., °F	Hardness, Rc	Keyhole Charpy, Ft-lb	Izod, Ft-lb	Ratio* V-Izod / Kh-Charpy	Tension Impact** Ft-lb	Tension Impact** Pct Elong.
Hy-Tuf	400	47.5	25	33	1.3	174	15.7
4340	700	47.5	17	10	0.6	112	11.5
4140	700	47.5	16	10	0.6	108	14.0
8630	560	47.5	24	16	0.7	124	12.5
4130 (O.Q.)	500	47.5	20	18	0.9	119	13.0
4130 (W.Q.)	500	47.5	27	20	0.7	110	13.0
Hy-Tuf	650	45.0	20	29	1.4	151	15.2
4340	870	45.0	20	13	0.7	112	13.0
4140	820	45.0	23	13	0.6	108	14.0
8630	625	45.0	20	15	0.8	117	12.5
4130 (O.Q.)	650	45.0	23	12	0.5	100	13.0
4130 (W.Q.)	600	45.0	23	15	0.6	114	14.5

* Ratio of areas, Izod to keyhole Charpy, 1.6

** Specimens were 3 in. overall length, 1.25 in. between 9/16-in. U.S. Standard threads, 1 in. gage length with 0.25 in. reduced section. This is ASTM Type T test piece modified by P. A. Haythorne as stated in private correspondence.

with similar pieces of three conventional steels were tested at the same time at temperatures up to 500°F. The data shown in table V and in fig. 2 confirm the indication that the transition temperature of HY-Tuf is below room temperature and furthermore that the transition temperatures of regular steels at this hardness level are at 300°F or higher. They also show that even at 300° to 500°F, the notch impact values of the conventional steels are lower than that of the new steel at temperatures down to —100°F. Finally, it may be concluded on the basis of the ratios of V-notch to keyhole-notch values, that the conventional steels at a hardness of 47 Rc are notch sensitive at temperatures up to about 500°F, whereas HY-Tuf is relatively insensitive to a notch even at room temperature, and below.

It seems desirable to show one further comparison among the notch impact values of the new steel and those of conventional steels on the basis of maximum impact values for hardness values over 45 Rc. It is well known that impact values of practically all constructional steels have a minimum after some tempering temperature between about 450° and 650°F. The new steel also has a minimum in the Izod v. tempering temperature curve, but the minimum occurs after a higher tempering temperature. Since in a number of cases the impact values of the conventional steels at a hardness of 47 Rc were close to the minimum on the curve, whereas at this same hardness, the value for the new steel was well above the minimum, it seemed that possibly the high toughness value of the new steel was attributable to a favorable tempering temperature to give the desired hardness level. Accordingly the optimum impact values are shown in table VI for hardness values of 45 Rc or higher

FIG. 4—Representative 60° notch with 0.000 in. radius used in notch tensile tests made in author's laboratory. Photographed at 100X with desk microscope with direct illumination and enlarged to 200X by projection.

for HY-Tuf, and conventional aircraft steels as reported by Haythorne.[3]

On this basis the new steel is appreciably tougher than all the others as measured by the V-notch Izod although it is not much better than the others according to the less sensitive keyhole Charpy test.

Since the tests on the new steel may have been made somewhat differently from the tests made by Haythorne, a set of test pieces was run in the authors' laboratory under identical test conditions to check these data. V-notch Izod pieces of the new steel, 4340, 4130, were quenched; tempered at 200°, 370°, 540° and 700°F; and broken at room temperature. The 4130 specimens were quenched in water because the impact

FIG. 5—Average results of notch tensile tests comparing HY-Tuf with conventional steels. Data except on curves marked with asterisk are from Sachs, Lubahn, and Ebert[9]; and Sachs, Ebert and Brown[10].

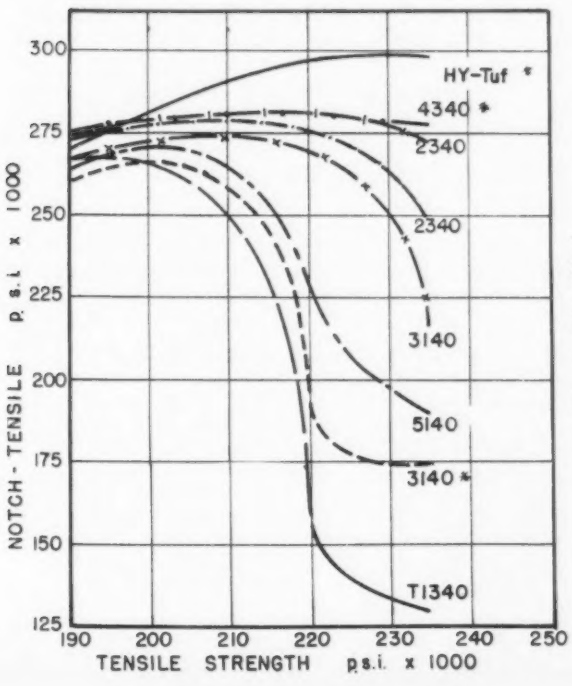


FIG. 6—Diagram indicating the general behavior in fatigue of steel of polished, notched or corroding specimens in relation to the tensile strength. Reproduced by permission from "Prevention of the Fatigue of Metals Under Repeated Stress" by the metallurgical staff of Battelle Memorial Institute, published by John Wiley & Sons, Inc.

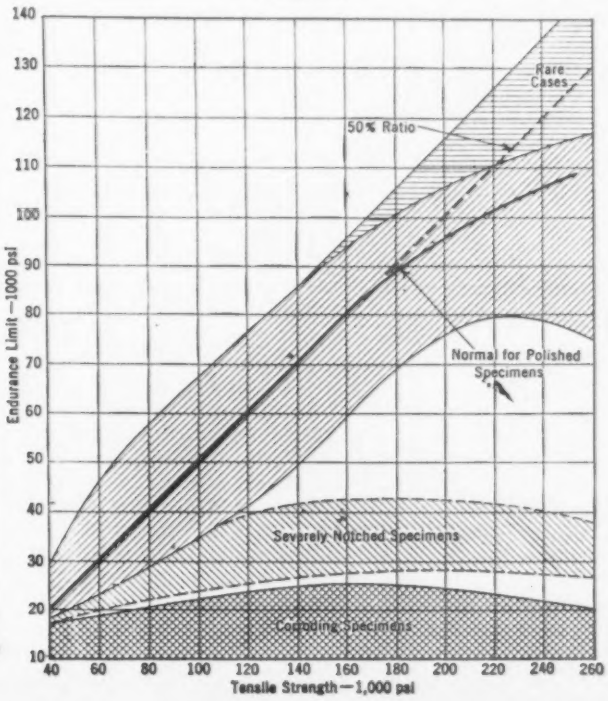


TABLE III

Notch Sensitivity of HY-Tuf

Temper., °F	Hardness, Rc	Standard Width		Double Width	
		At 80° F	At −40° F	At 80° F	At −40° F
400	47.5	15-20	17-21	40-40	25-29
550	46.5	21-21	18-20	40-44	34-37

Single and double-width keyhole Charpy specimens were oil quenched from 1600°F and tempered as indicated.

TABLE IV

Effect of Testing Temperature on Notch Sensitivity of HY-Tuf

Test Temp., °F	Charpy Impact, Ft-lb		Ratio V/kh
	V-notch	Keyhole-notch	
80° F	30	23	1.30
− 40° F	23	20	1.15
−100° F	21	18	1.17
−200° F	16	16	1.00
−320° F	6	8	0.75

Test pieces quenched from 1600°F in oil and tempered at 550°F for 2 hr; Rockwell C 46.5

TABLE VI

Comparison of Maximum Impact Values of HY-Tuf and Regular Aircraft Steel at Hardness of 45 Rc or Higher

STEEL	Izod			Keyhole Charpy		
	Temper., °F	Rc	Ft-lb	Temper., °F	Rc	Ft-lb
HY-Tuf	400	47.5	33	500	46.5	26
4340	860	45	13	860	45	20
4140	500	52	17	820	45	22
8630	400	51	19	450	50	25
4130 (O.Q.)	500	47.5	17	650	45	23
4130 (W.Q.)	450	50	21	500	47.5	27

All data except for new steel from Haythorne[3]

values reported by Haythorne for this steel were higher when the steel was quenched in water than when it was quenched in oil. The test pieces of the other two steels were quenched in oil.

The data for this group of tests are plotted in fig. 3. It is shown clearly that the V-notch Izod values for the new steel are above those for the conventional steels over the entire range of tempering temperatures up to 700°F. Furthermore, the curves show that the new steel is close to its maximum V-notch impact value after being tempered at a temperature which causes the older steels to have very low impact values.

Notch Tensile: Although the notch-impact test is probably as good a test as any for showing relative notch sensitivity among materials, two other methods were used for comparing the notch sensitivity of HY-Tuf with that of conventional steels. These were the notch tensile test, as discussed by Sachs[9, 10] and the notch fatigue test as discussed by the staff of Battelle Memorial Institute.[11]

It was established by Sachs that under static tensile testing conditions with concentric loading, and with a 60° sharp notch (0.000 in. radius) to a depth of 0.074 in. on the 0.505 in. diam cross-section of the tensile piece, the breaking stress is about 1.5 times the ordinary tensile strength when the tensile strength is less than about 175,000 psi, and that the composition of the steel has no effect on this ratio. Sachs futher showed that when the tensile strength of the steel is over about 175,000 psi the ratio between notch-tensile and tensile strength decreases as tensile strength increases, and that at a tensile strength level of 235,000 psi the ratio may vary from about 1.15 to about 0.55 depending on the analysis of the steel. It was indicated therefore that this test method was effective in demonstrating that some steels at high strength levels are less sensitive to notches than others, and that it was desirable to test the new steel by this method.

The procedure followed was close to that described by Sachs. The very sharp 60° notch lapped in with a carbide tool is illustrated in fig. 4. HY-Tuf was tested with samples of 4340 and 3140 for comparison, the latter having been selected because it was one of the materials studied by Sachs. Four test pieces of each steel were tested for each strength level over 200,000 psi, the highest strength level used being about 240,-

TABLE V

Effect of Testing Temperature on Notch Impact Values of HY-Tuf and Conventional Steels

STEEL	Charpy Impact, Ft-lb									
	V-Notch					Keyhole-Notch				
	−100° F	80° F	212° F	300° F	500° F	−100° F	80° F	212° F	300° F	500° F
HY-Tuf	23-25	30-33	36-37	34-34	31-31	20-23	27-28	24-25	23-25	23-23
4340	6- 7	10-11	12-12	15-17	19-20	8-10	12-16	14-15	14-16	14-15
4140	3- 5	7- 7	10-12	15-17	17-19	4- 4	9-10	7- 9	14-15	12-15
9442	6- 6	8-10	10-17	17-17	20-21	10-10	15-17	16-17	15-16	16-17

Specimens machined to V-notch and keyhole Charpy pieces were quenched and tempered to a hardness of Rockwell C 47.

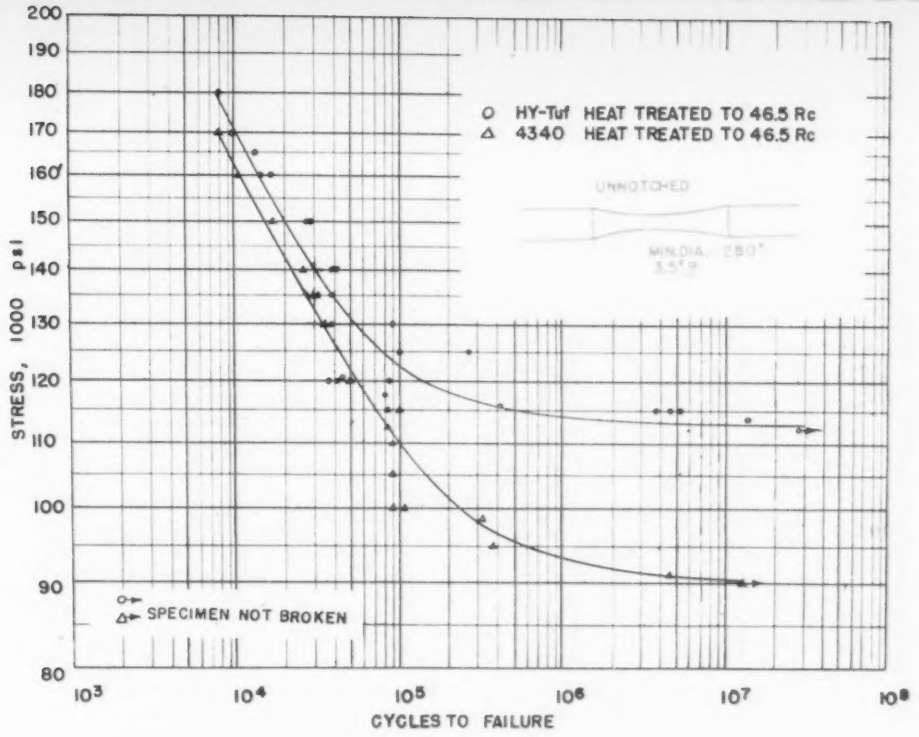


FIG. 7 — Comparison of fatigue properties of HY-Tuf and SAE 4340. Smooth gage section.

000 psi, since this is the maximum attainable by the new steel. Very consistent results were obtained with the new steel and with 4340 at the high strength levels, but there was considerable spread in the results on the 3140 steel, as was also found by Sachs. The average results of the tests in the authors' laboratory and those published by Sachs and his associates are given in fig. 5.

These results show that at tensile strength levels between 200,000 and 235,000 psi HY-Tuf has higher notch tensile strength than any of the other steels, and that even at 235,000 psi tensile strength this steel shows a ratio of notch tensile to ordinary tensile of almost 1.3 as against the maximum ratio of 1.5; whereas other steels at this same strength level have ratios from less than 1.2 down to about 0.6. The notch tensile test therefore confirms the indication of the notch impact test that at high strength levels

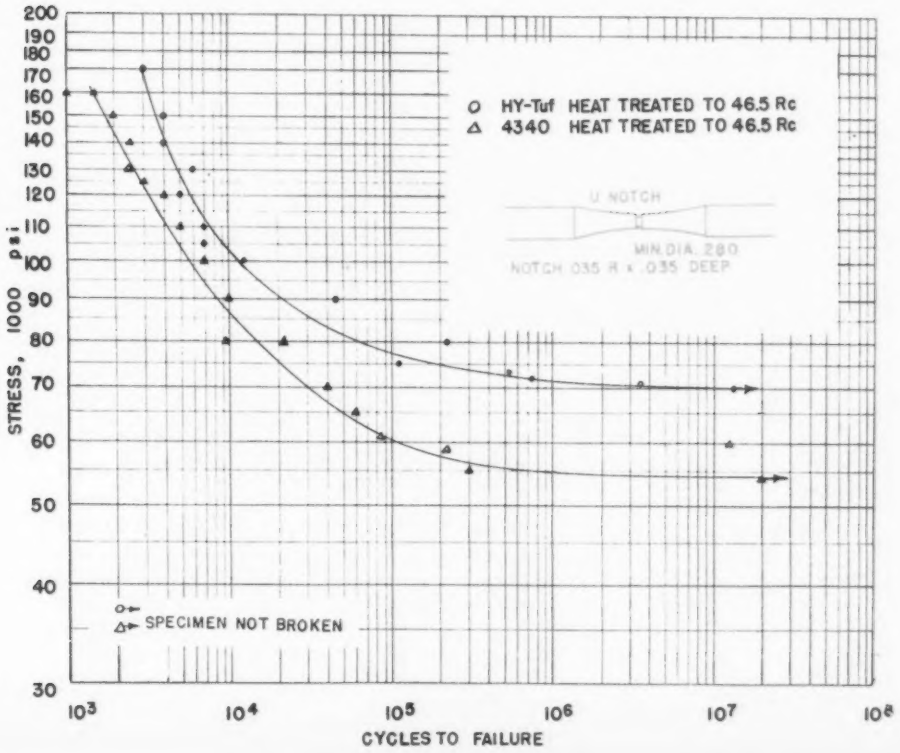


FIG. 8 — Comparison of fatigue properties of HY-Tuf and SAE 4340. U-notch in gage section.

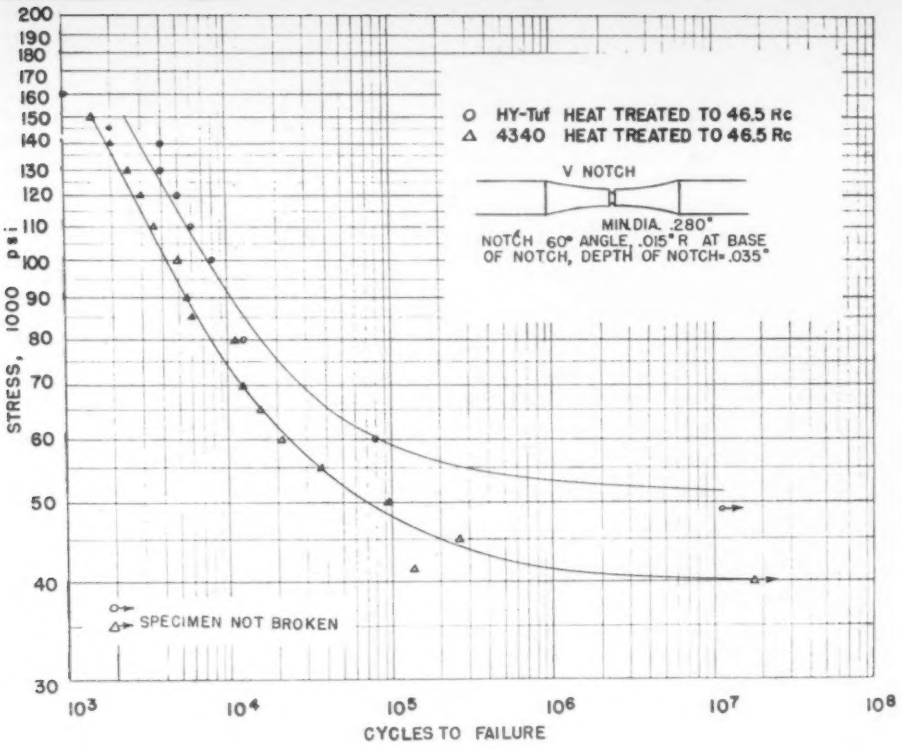


FIG. 9—Comparison of fatigue properties of HY-Tuf and SAE 4340. V-notch in gage section.

HY-Tuf is less sensitive to a notch than conventional steels.

Notch Fatigue: Fig. 6 reproduced from the book on failures under repeated stress previously mentioned shows that the value of endurance limit increases generally with increase in tensile strength if the endurance limit is measured by means of test pieces having a smooth gage section, but when a notch is introduced into the gage section, the endurance limit falls appreciably and is practically independent of the strength level of the steel being tested.

It seemed appropriate to test HY-Tuf at a high strength level under repeated stress both with a smooth gage section as well as with a notched gage section. Since few numerical data are available in the literature on this type test, specimens of 4340 were run along with those of the new steel for comparison purposes. The test pieces of both steels were heat treated to 46.5 Rc, which corresponds to a strength level of about 235,000 psi.

The test pieces were run in Krause rotating-beam type testing machines. The gage section in each test piece was polished to a 3.5 in. radius with the polishing scratches in a longitudinal direction. In addition, some test pieces had notches ground into the gage sections. In one set of test pieces, the notch was U-shaped with a depth of 0.035 in. and a base radius of 0.035 in. In another set of test pieces the notch was V-shaped with a 60° included angle 0.035 in. deep, and a base radius of 0.015 in.

The data for the three types of test pieces are shown in figs. 7, 8 and 9. It is clear from these data that the introduction of a notch lowers the endurance limit of both the steels tested, but not to the same degree, HY-Tuf being less affected than 4340. For the test pieces with both the smooth and the notched gage sections, HY-Tuf at a tensile strength of 235,000 psi has higher endurance values than expected according to the Battelle diagram reproduced in fig. 10 with the points from figs. 7 and 9 for the new steel and for 4340. Furthermore, when HY-Tuf is compared with 4340 under identical testing conditions at stresses which would cause the latter to break during the test, as suggested by Almen,[12]

TABLE VII

Comparison of Repeated Stress Values of HY-Tuf and 4340 Both Heat Treated to 46.5 Rc.
Number of stress reversals to failure at different stress levels

Testing Stress Level, Psi	Smooth Section		U-Notch		V-Notch	
	HY-Tuf	4340	HY-Tuf	4340	HY-Tuf	4340
55,000	.....	.....	no failure**	800,000	300,000	36,000
70,000	.....	.....	no failure**	30,000	28,000	12,000
85,000	.....	.....	30,000	10,000	12,000	6,500
100,000	no failure**	240,000	11,000	5,500	7,500	4,200
115,000	500,000	70,000	6,500	3,600	5,000	3,000

** No failure in over 10 million reversals

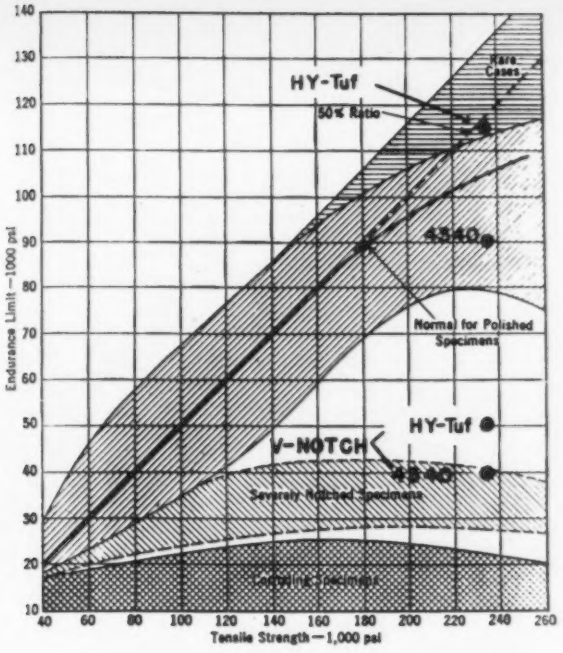


FIG. 10—Battelle diagram of fig. 6, with points from figs. 7 and 9 for HY-Tuf and for 4340 superimposed on it.

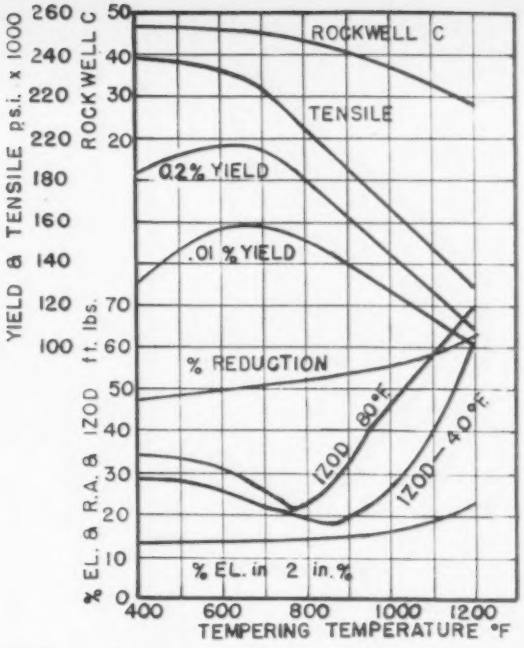


FIG. 11—Effect of tempering on the mechanical properties of HY-Tuf. Oversize 0.505 in. tensile and standard 0.394 in. square Izod pieces quenched in oil from 1575°F.

it may be shown, as in table VII that HY-Tuf has much better endurance than 4340 over a wide range of stresses, with both smooth and notched test pieces.

Thus it has been shown that at a strength level of 235,000 psi the new steel has marked advantages over conventional steels in resistance to notch effects both in static and impact loading, and in reversed stress loading. On the other hand, at strength levels below about 200,000 psi, HY-Tuf has no advantages over the older steels. The effect of tempering temperature on the mechanical properties is shown in fig. 11. When the data for the higher tempering temperatures are compared with those of conventional steels, the differences are slight.

In a subsequent issue the authors will discuss the hardenability characteristics of this new steel and will present mechanical property data and a microstructure study.—Ed.

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"Nuclear Physics Charts." Six lithographed wall charts prepared by the Westinghouse Electric Corp. show the ten basic particles important in nuclear physics, and explain nuclei structure, natural and man-made nuclear reactions, apparatus for detecting and inducing the reactions, and the major theoretical, experimental and engineering achievements in nuclear physics. A 32-page book of supplementary information accompanies the charts. Westinghouse Electric Corp., School Service, 306 Fourth Ave., Pittsburgh 30. $1.00.

* * *

"Proceedings of the Fourth Annual Spring Meeting of the Metal Powder Assn." Texts of eight papers dealing with powder metallurgy practice and developments are collated in this book. Controlled atmospheres in sintering, metal ceramics, compressibility factors and other subjects are discussed. Metal Powder Assn., 420 Lexington Ave., New York 17. $2.50. 85 p.

"Metals Handbook—1948 Edition," edited by Taylor Lyman. New edition of this volume provides articles covering the entire field of standard metallurgy. The book is divided into four principal sections: General, Ferrous Metals, Nonferrous Metals and Constitution of Alloys. In the General section, articles have been added on dilatometry, wear, oxidation, stress corrosion, relief of residual stress and service failures. Additions in the Ferrous Metals section include articles on the alloying elements in steel, hardenability, and the cast and wrought materials used at high temperature or in corrosive environments. Discussions of melting, shaping, treating and corrosion have been given additional space in the Nonferrous section, and an extensive collection of alloy phase diagrams have been included in the material dealing with Constitution of Alloys. American Society for Metals, 7301 Euclid Ave., Cleveland 3. Members, free. Nonmembers, $15.00. 1444 p.

• • Training new workers is a major responsibility of the Soviet foreman.

The Russian Foreman

By VICTOR I. BUMAGIN
Editor and Director, Foreman Training, Labor Relations Institute, New York

IN a study of Russia's industrial supervisory techniques and problems,[1] one conclusion, above all others, stands out—there is a complete lack of human relations training in Soviet industry. The direct correlation between worker-supervisor relations and production that is accepted as gospel in this country is completely ignored in the Russian system.

Each plant in the Soviet Union has a single objective—production, production and more production. The plant's production goals for the day, the week, the month, the year, are drummed into the foreman from morning until night through every available means. He and his department workers know these goals as well as they know their own names. The foreman's only job is to see that the goals are fulfilled and overfulfilled.

When mandatory overtime was stopped at the end of the war, the 8-hr day was restored and the task of overfulfilling production goals became once again an acute problem for Russian supervision.

After an investigation of 210 enterprises in various industries, the Soviet All-Union Central Council of Trade Unions, on July 21, 1947, adopted a resolution which revealed some of the methods that were being employed by foremen to cope with the problem of meeting production quotas. The investigation pointed out that "in many enterprises labor laws are being violated; overtime is common, the work week is lengthened and rest days are arbitrarily postponed." In 1946 some plants did not permit their workers to take vacations until the end of the year; in others, vacations were paid for, but not given. And such action was taken without the consent of the workers.

Overtime work and work on rest days, it was stated, were prevalent when management sought to meet production quotas which were endangered by machine breakdown or inefficiency in the supply of materials.

[1] *"Put Yourself in the Shoes of a Typical Russian Foreman," Foreman Facts, Sept. 5, 1948.*

The Foreman's Job

The Soviet foreman is an agent of the plant manager. The manager sets the goals for the plant on the basis of materials, labor force, equipment on hand and expected, past performance, and other factors.

The plant manager must make a profit. His job depends upon it. The foreman, as his agent, must produce the quota set for the department, or he loses his job.

In Russia's struggle for industrialization, the foreman is cast in a key role, but the Soviet concept of the duties and training of a supervisor differ widely with the American viewpoint. This article examines the Russian foreman and finds that, in comparison with his American counterpart, he suffers from a lack of understanding of the human relations aspect of foremanship and is enmeshed in an organizational structure too rigid to permit adequate concentration on the problems of production.

This type of pressure is not uncommon in Soviet industrial life and it leads to all sorts of complications. For instance, a foreman coming to the end of his production month, finding himself behind the quota, knows he is in a difficult position. He must meet the quota or lose his job. He takes the easiest way out by a simple paper and pencil process—he merely fills the quota on paper. Russian newspapers and periodicals have devoted much space to what happens to men caught falsifying records.

The difficult position of the Soviet supervisor is made even more difficult in this respect by certain industrial practices. For example, no deviations whatsoever are allowed from fixed norms, standards, production processes, etc. Foremen who allow such infringements are brought before the courts in accordance with an order of the People's Commissars. This is called "technological discipline."

A survey of labor conditions in the Soviet steel industry, made by a delegation of the British Iron & Steel Trade Confederation which visited Russia in 1946, was reported in "British Labor Views the USSR Steel Industry," THE IRON AGE, Sept. 12, 1946.—Ed.

To become a foreman in the Soviet setup, a worker must produce faster and better than the other men in his department. That is the only basis for moving men up. The training is almost entirely technical or scientific.

The ability to handle men, which is the most important job of the American foreman, is completely disregarded. There is practically no recognition in Soviet industry of the importance of training for administration. And, unlike the American foreman, the Russian counterpart receives no literature designed to keep him abreast of the latest developments in the field. Except for the school courses he may be taking, the Russian supervisor is expected to learn primarily from the problems he personally faces in his own department.

Lively press campaigns from time to time in Soviet newspapers such as Trud, the organ of the trade union movement, and Pravda, the newspaper of the Communist Party, attempt to improve the status of foremen. Among the chief complaints of supervisors, as indicated by these campaigns are: (1) Too many forms to fill out—and because of them, the foreman cannot give proper attention to his work; (2) not enough authority to maintain discipline in his department; (3) orders often issued over the heads of the foremen by the plant managers, and (4) the

Machine shop superintendent at the Dnieper Hydro-Electric Station checking a part.

• • Russian foreman supervising an assembly job.

foreman's job is too much like that of an auxiliary worker or clerk.

The following is a breakdown of some of the Russian foreman's most important duties:

Breaking in New Workers: — Every Russian plant is part of a gigantic on-the-job training program. Russian industry in the past year trained over a million workers on the job. The foreman's part in the program consisted of showing them how to produce. Nothing else.

The present five-year plan (1946-50), says Trud, calls for training 4.5 million young people before entrance into industry, and for training of 7.7 million unskilled workers, including those entering industry for the first time. The plan anticipates 33.5 million workers by the end of 1950.

Every boy or girl finishing a training course under this program is examined and given a job classification. They are then considered mobilized for a period of four consecutive years. At this point the new worker is ordered to a State enterprise. The transition from training school to industry is carefully controlled by the State.

Training All Workers:—One of the principal methods used by the Russian government is the Stakhanovite system. A worker becomes a Stakhanovite when he consistently overfulfills his quota by a large amount. The foreman is probably a Stakhanovite or chances would have been against his becoming a foreman. Here, too, his job is mainly one of showing other workers how to do the job.

TABLE I

Accidents per Thousand Workers

Industry	United States	Soviet Union
Mining, coal	108	292
Metallurgical	*	198
Machine Building	29	165
Textile	18	48

* Too broad a classification to permit establishment of a comparable U. S. figure.

Despite the millions of new workers flowing into Soviet industry, their effectiveness, according to press reports, is severely limited by the failure of plants to utilize fully the newly acquired skills and by the low quality of the training.

Under a government order, foremen and plant managers are forbidden to change a worker's job classification. Newspaper reports state, however, this directive has been flagrantly violated on many occasions. On July 4, 1947, for instance, Trud reported that in one metallurgical plant, 739 of 1923 trained workers were not doing work they were trained for. At another plant more than 400 out of 1405 workers were not using their training. The situation was described as similar in other plants. Izvestia, on July 23, 1947, reported that more than 500 out of 1500 trained workers on a Ministry of Construction project were not using their acquired skills.

As for the quality of the training, a high industrial official—pointing his finger at foremen—has this to say in Pravda on July 18, 1947: "The general failing among the majority of industries is in the low quality of the training given. In many cases, the training is done in a nonsystematic, haphazard way, and the workers are directed into production without the proper testing of their training . . . these failings may be attributed to the absence of attention to the problem on the part of management . . ."

Quality and Cost Control:—The percentage of rejects in Soviet industry is terrifically high. Late figures show that it has been as high as 23 pct of the total expenditure for all raw materials. This is a general figure with variations by industry.

However, the foreman is subject to a prison sentence if he consistently turns out low quality goods. And quality is often affected by the quantity of production demanded. At this point, the Stakhanovite system, which is the Russian form of our time and methods study, enters. The system involves setting a standard by breaking the job down into its simplest operations. Unlike

American technique, however, it does not take into consideration such things as the human element, fatigue, machine breakdown, etc. It operates on the basis of the "best" producer rather than the "average" producer.

The Stakhanovite system originated when a miner, by the name of Stakhanov, who happened to be a sturdy, intelligent worker, one day produced three times his quota by simply breaking down his operations and eliminating unnecessary movements.

Overnight, Stakhanov's fame spread far and wide, and he became the center of what soon developed into a cult. The cult was called Stakhanovism in honor of the founder, and workers became Stakhanovites when they produced over and beyond their quotas.

Keeping Records:—This is one of the Russian foreman's pet gripes. He is swamped by all kinds of forms to fill out. His main trouble in this connection stems from the fact that Russian industrial training does not teach him the easiest, most efficient methods of keeping those records.

Rating and Classifying Workers:—This is one of his easiest jobs. It differs from the American variety in that there are only two points for the foreman to consider: (1) How much does the worker produce, and (2) how does that compare with his quota or norm?

Safety:—The Russian foreman works under some very progressive-sounding laws as far as insuring safety for his workers is concerned. Nonetheless the last available Soviet figures (taken from the handbook of the Soviet Union) show an average yearly accident rate of approximately 17 pct per thousand, or over four million industrial injuries. Table I shows some of the figures for representative industries compared with United States statistics for 1947. These comparative data show quite a dramatic variance. The high Russian accident incidence can be attributed to a number of things — inadequate worker training, lack of understanding of equipment, lower quality equipment, probably a certain amount of risk-taking to maintain quota fulfillment, perhaps worker exhaustion due to overtime necessitated by the quota system and other contributing factors.

To the American-indoctrinated student of labor, keeping in mind that the primary objective is production, the overall picture of the Russian foreman system would seem ill-advised, both from the short and long range viewpoints. The element of human relations cannot be ignored—that much would seem to have been proved in American industry — and the rigidity of the Soviet system would seem stifling to progress if not to production objectives.

Eliminating Oil Fog and Smoke

OIL mist and smoke generated in metal cutting operations have been largely eliminated by the use of electronic collectors and precipitators in the Tire Valve Dept. of Bridgeport Brass Co., Bridgeport, Conn.

In this department a number of Kingsbury and National Acme Machines are used in cutting brass tire valves and inserts. Although each machine is covered with a metal hood, it was estimated that, prior to the installation of the collectors, 50 pct of the cutting oil falling on the hot, rapidly turning tools and work was being lost to the atmosphere as mist. Since installing the collectors, manufactured by American Air Filter Co., Inc., Louisville, under the name Electro-Mist Collectors, 90 pct of the mist is captured.

Aside from the saving in oil, the department benefits from improved working conditions and elimination of a potential fire hazard.

In operation, the collectors, one mounted over each machine, as shown in the accompanying illustration, draw the mist and smoke into the unit by the draft of an exhaust fan. The mist is filtered and the tiny oil vapor particles are ionized to cause precipitation and the formation of drops of oil which drain back to the machine.

The length of time the collector units will operate before requiring cleaning largely depends upon the quantity of mist being handled. If the cutting operation is light and the general atmosphere reasonably clean, the flushing of the oil as it runs off the plates makes the units self-flushing. In more severe cutting operations, on one shift a day, the units need cleaning about once a month. On two or three shift operations, it has been found advisable to clean the units every two weeks.

For cleaning, the collector plates, filter and ionizing unit are hung in a standard trichlorethylene degreaser for a short interval.

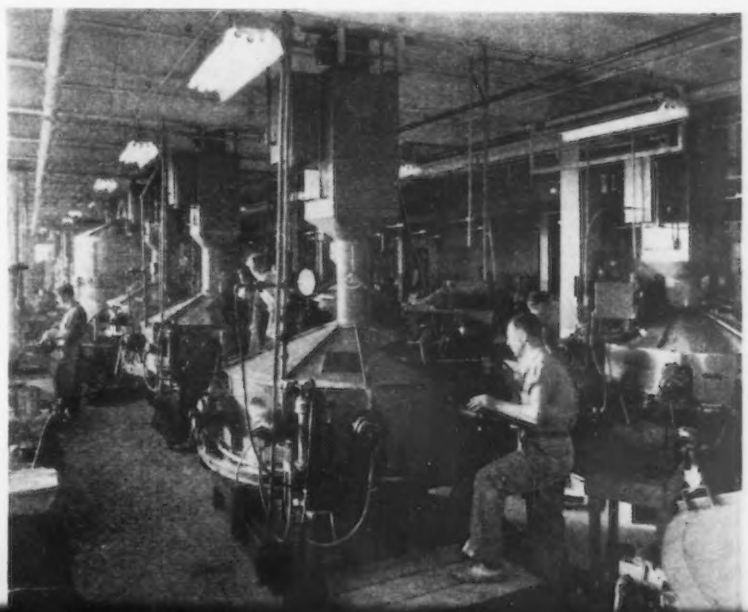


PHOTO shows cupola No. 2 tapping, at Central Iron and Steel Co., while No. 1 is down for repairs. At the left (not shown) is the water-cooled cupola which was described in THE IRON AGE, Aug. 19, 1948.

Cupola Hot Metal

In an attempt to minimize open hearth raw material problems, four nonintegrated steel mills have resorted to the use of cupola hot metal in their steelmaking operations. The success of these efforts is attested to be the cost and operating data presented in this article covering three of these plants: Sheffield Steel Corp., Stanley Works, and Central Iron & Steel Co. Construction details are also given of cupolas capable of operating continuously for up to 98 hr. between refractory repairs.

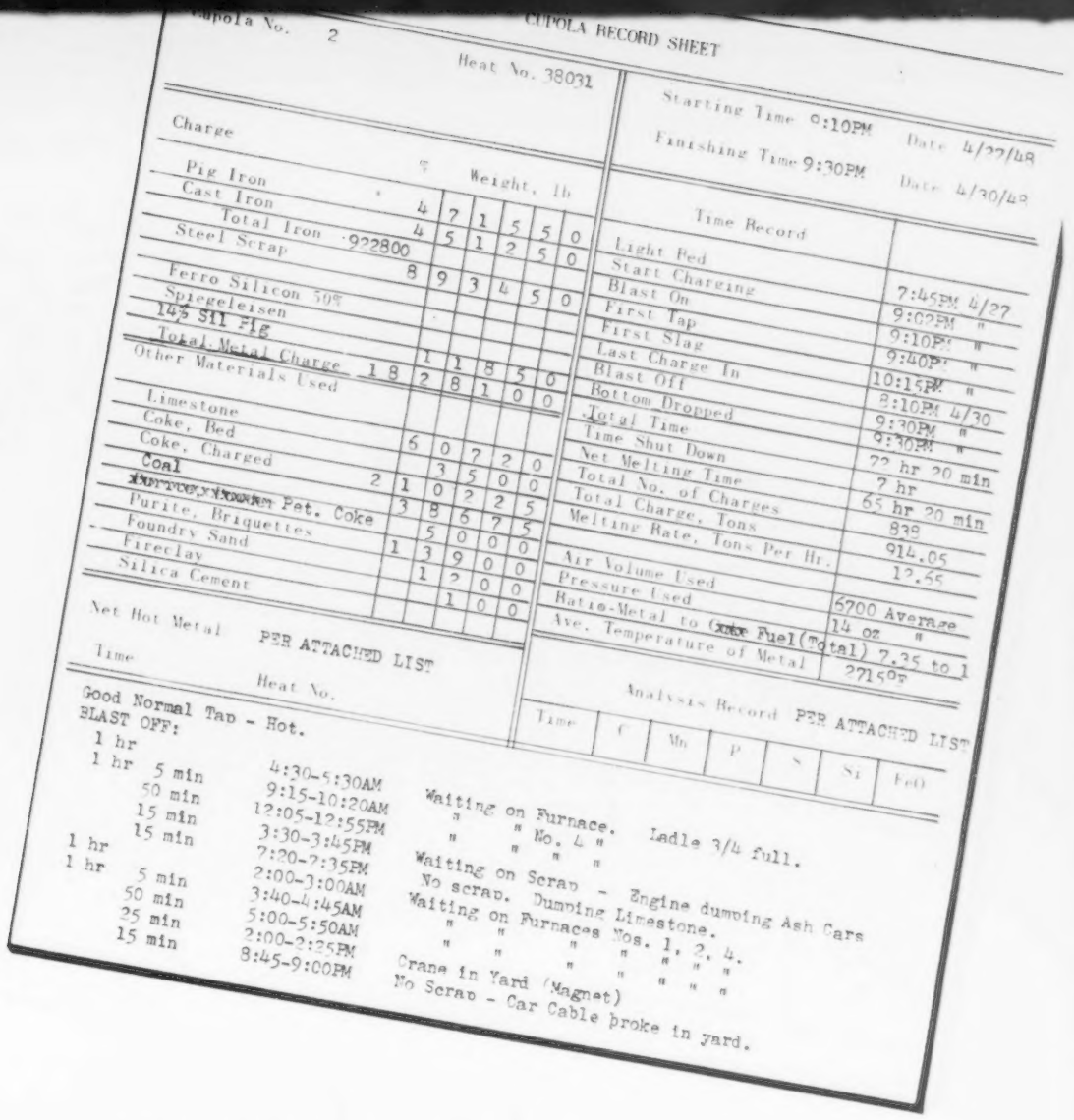
o o o

By E. S. KOPECKI
Metallurgical Editor,
THE IRON AGE

o o o

CONFRONTING the steel industry today, particularly the nonintegrated plants, is a serious shortage in supply of pig iron. Cold metal shops depend heavily upon at least a certain percentage of pig iron in the open-hearth charge in order to produce quality steel. In an effort to overcome this lack of pig iron, many plants have resorted to the use of various carbon substitutes. Byproduct coke, tar coke, petroleum coke, graphite, crushed electrodes, cast iron, spiegel, anthracite, river coal and commercial carbonaceous materials have been weighed from time to time as possible carbon substitutes, but local conditions at some plants invariably affect the suitability of most of these materials.

Faced with an increase in openhearth heat time, arising from the use of carbon substitutes, together with accompanying refractory and fuel consumption problems, several plants have resorted to the production of hot metal for charging into the openhearth. Sheffield



CUPOLA RECORD SHEET

Cupola No. 2 — Heat No. 38031

Starting Time 6:10PM Date 4/27/48

Finishing Time 9:30PM Date 4/30/48

Charge	%	Weight, lb
Pig Iron	4	7 1 5 5 0
Cast Iron	4	5 1 2 5 0
Total Iron 922800		
Steel Scrap	8	9 3 4 5 0
Ferro Silicon 50%		
Spiegeleisen		
14% Sil Pig		
Total Metal Charge 18		1 1 8 5 0
Other Materials Used		2 8 1 0 0
Limestone		
Coke, Bed	6	0 7 2 0
Coke, Charged		3 5 0 0
Coal	2	1 0 2 2 5
[illegible] Pet. Coke	3	8 6 7 5
Purite, Briquettes		5 0 0 0
Foundry Sand	1	3 9 0 0
Fireclay		1 2 0 0
Silica Cement		1 0 0

Net Hot Metal PER ATTACHED LIST

Time Record	
Light Bed	
Start Charging	7:45PM 4/27
Blast On	9:02PM "
First Tap	9:10PM "
First Slag	9:40PM "
Last Charge In	10:15PM "
Blast Off	8:10PM 4/30
Bottom Dropped	9:30PM "
Total Time	9:30PM "
Time Shut Down	22 hr 20 min
Net Melting Time	7 hr
Total No. of Charges	65 hr 20 min
Total Charge, Tons	838
Melting Rate, Tons Per Hr.	914.05
Air Volume Used	12.65
Pressure Used	6700 Average
Ratio-Metal to [illegible] Fuel (Total)	14 oz "
Ave. Temperature of Metal	7.35 to 1
	2715°F

Analysis Record PER ATTACHED LIST

Time	C	Mn	P	S	Si	FeO

Time — Heat No.

Good Normal Tap - Hot.

BLAST OFF:

1 hr	4:30-5:30AM	Waiting on Furnace. Ladle 3/4 full.
1 hr 5 min	9:15-10:20AM	" " No. 4 "
50 min	12:05-12:55PM	" " " "
15 min	3:30-3:45PM	Waiting on Scrap - Engine dumping Ash Cars
15 min	7:20-7:35PM	No scrap. Dumping Limestone.
1 hr	2:00-3:00AM	Waiting on Furnaces Nos. 1, 2, 4.
1 hr 5 min	3:40-4:45AM	" " " " " " "
50 min	5:00-5:50AM	" " " " " " "
25 min	2:00-2:25PM	Crane in Yard (Magnet)
15 min	8:45-9:00PM	No Scrap - Car Cable broke in yard.

FIG. 1—A typical cupola record sheet (courtesy The Stanley Works).

For the Openhearth

Steel Corp., Kansas City; Laclede Steel Co., Alton, Ill.; The Stanley Works, Bridgeport, Conn.; and Central Iron and Steel Co., Harrisburg, Pa., have installed cupola furnaces in their openhearth shops and have been successful in minimizing their raw material difficulties.

As experience has been gained and the problems associated with cupola operation gradually solved, it has become apparent that not only can the cupola produce hot metal at the same, or even at less cost, as compared with the going price of pig iron, but that openhearth heat time and fuel costs are also substantially reduced.

As a specific example, observe the situation that was faced by the Stanley Works. A large percentage of the steel made at this plant is of the deep-drawing grades, which makes control of sulfur content an important consideration. The shortage of pig iron forced the company into using a cold charge made up of between 15 and 30 pct cast iron and including large additions of coal or coke. The sulfur content of the cast iron and the coke has been progressively increasing to the extent that the charged sulfur is now two to three times the amount it was when sufficient pig iron was available. The desire to overcome this use of cold cast iron and coke led to the successful installation, about a year ago, of two cupolas for continuous production of hot metal for use in the openhearth.

A typical cupola record sheet is shown in fig. 1. The iron charged in the cupola is still mostly high sulfur cast iron and the coke used runs about 1.25 pct S, with the result that the iron from the cupola occasionally runs as high as 0.200 pct S. Sulfur content is reduced by tapping the cupola iron into a holding ladle from where it is poured into a transfer ladle into which soda ash (Purite) has been added. A violent boiling action takes place in the transfer ladle and a highly fluid slag is formed. The reaction is allowed to continue until the

ABOVE

FIG. 2 — Sulfur removal is effected at The Stanley Works by reacting soda ash with molten iron in the transfer ladle. Photo shows slag resulting from the reaction being skimmed off the metal surface prior to charging the metal into the openhearth.

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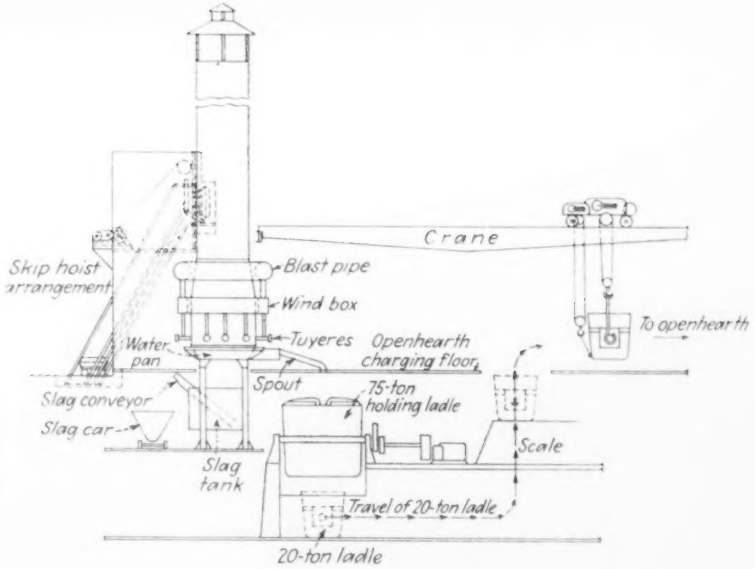
FIG. 3—Schematic arrangement, illustrating the cupola installation at The Stanley Works and the proposed mechanized charging setup.



action ceases, and then the slag, which has absorbed sulfur from the metal, is removed as completely as possible, as indicated in fig. 2. The metal is then ready for transfer to the openhearth. Fig. 3 is a schematic arrangement of the installation at the Stanley Works.

The effectiveness of this desulfurizing treatment, using between 15 to 20 lb soda ash per ton iron, is indicated in table I. The percent reduction in sulfur content is influenced by carbon content and varies from about 29 to 43 pct.

The hot metal produced at Sheffield Steel Corp. has an analysis of 2.80 to 3.00 C, 0.35 Mn, 0.200 to 0.250 P, 0.40 to 0.70 Si and 0.150 to 0.185 S. Sulfur removal is effected in a manner similar to the operation at the Stanley Works, and results in a reduction in sulfur content of from 30 to 50 pct.

The Central Iron and Steel plant possesses no holding ladle and must therefore utilize a somewhat different technique for desulfurization. When the ladle (40 ton) into which the cupola metal is being tapped is full, the iron is poured into another 40-ton ladle which has been preheated and into which has been added soda ash. This method is also successful in removing some 45 to 50 pct of the sulfur, and provides hot metal for the openhearth containing about 0.100 S. If a greater sulfur reduction is required, the desulfurizing treatment is repeated by transferring the hot metal to another ladle (containing soda ash) prior to charging into the openhearth. The resulting steel runs about 0.05 to 0.06 S.

The two cupolas in use at the Stanley Works, which operate alternately to insure continuous production of hot metal, are illustrated in figs. 4 and 5. It is interesting to observe that these units represent a definite departure from the foundryman's conception of a cupola. Each cupola is capable of 72 hr continuous operation —in fact up to 98 hr, if required—before relining. With an average yield of 92 pct, the total monthly production of hot metal has been gradually increased to some 5000 to 7500 tons.

The significant dimensions of the cupola installation are indicated in fig. 5. Note that relining the 24 in. or refractory reduces the 104-in. shell diam in the melting zone to an effective stack diam of about 56 in. Silica lining blocks are used in the melting zone above the tuyeres only. The present blower furnishes up to about 6500 cfm (overloaded) through 12 tuyeres, although a larger blower, rated at 8500 cfm will soon be installed. Windbox pressure starts off (with newly relined cupola) at about 24 oz and drops to about 8 oz after 72 hr continuous operation.

Separation of the slag and metal is accom-

plished outside the tap hole. A well construction, the general appearance of which is shown in fig. 4, is so arranged that slag rises to the top and runs off to the slag sump, while the heavier density metal exits at an intermediate level and flows on down the tap runner to the holding ladle.

The outer shell surface is water cooled by passing water through the 2-in. pipe, shown in fig. 5 and located just below the blast pipe. The presence of holes in the 2-in. pipe in the surface facing the cupola shell allows streams of water to strike the shell and flow on down to the water pan.

It can be observed on the drawing, fig. 5, that a double windbox setup is indicated. The upper windbox was conceived for the purpose of helping to equalize the air blast, in pressure and in volume, so as to give a uniform distribution of air through each of the 12 tuyeres.

Sheffield Steel was successful in producing 11,645 net tons average per month during 1947, utilizing two cupolas with shell diam of 108 in. and 19 in. of lining. Here again, approximately 70 hr continuous operation is obtained before relining is necessary. The average yield for 1947 operations was 96.63 pct. The air blast varies from 8000 to 9000 cfm, and is introduced through 16 tuyeres, each one measuring 3x4½ in. (after relining). The lining practice observed is such new cupola blocks are used in the well up to the tuyeres; from the tuyeres on up, used openhearth silica roof brick is used.

At Central Iron and Steel the cupola shells measure 96 in. in diam and are lined with 18 in. of refractory, with a lining life of some 48 to 64 hr. The production rate runs from 12 to 13 tons hot metal per hr and the yield averages about 94 to 97 pct.

Of the three companies whose operations are discussed in this article, Sheffield Steel Corp. is the only one possessing a skip-hoist charging installation at this time (see fig. 6). Not unlike a blast furnace setup, this type of charging system greatly enhances the economic phase of operations, as evidenced by the conversion cost of $6.12 per ton iron as against some $10 experienced by the Stanley Works.

Some interesting cost data were recently reported by A. W. Gregg[1] based on a mechanized charging system. The $4.99 operating cost for a No. 12 cupola per ton of melt shown by Gregg

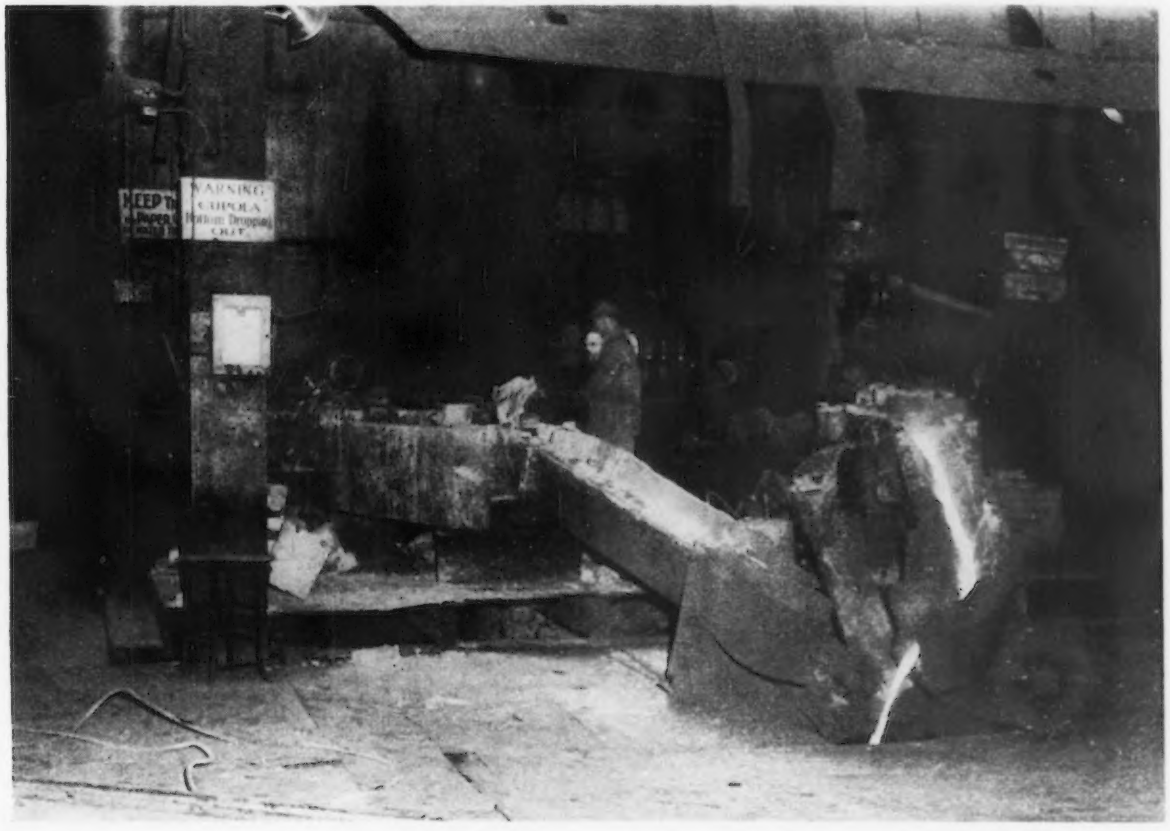
TABLE I

Reduction of Sulfur in Iron by Treatment with Soda Ash

Analyses from Cupola

Average Carbon, Pct	Average Sulfur, Pct	Average Sulfur after Treatment, Pct	Pct Reduction of Sulfur
3.15	0.194	0.110	43
3.15	0.136	0.097	29
3.00	0.170	0.099	41
3.00	0.145	0.110	24
2.75	0.181	0.129	29

FIG. 4—Two cupolas operate alternately at The Stanley Works producing up to 7500 tons hot metal per month. The metal taps into a 75-ton holding ladle, as indicated in fig. 3.



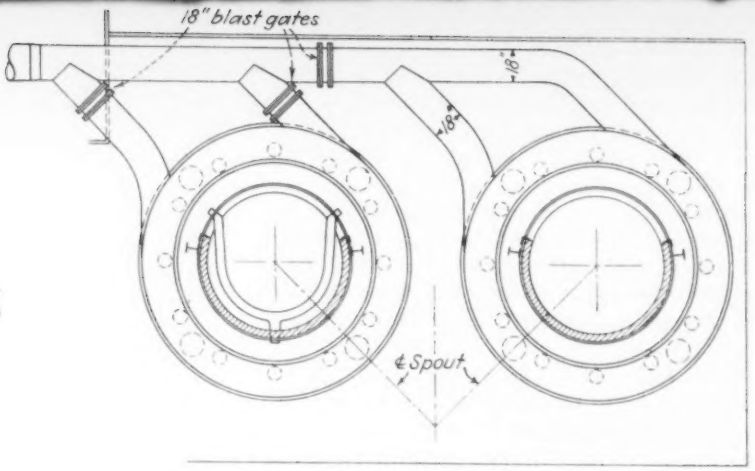


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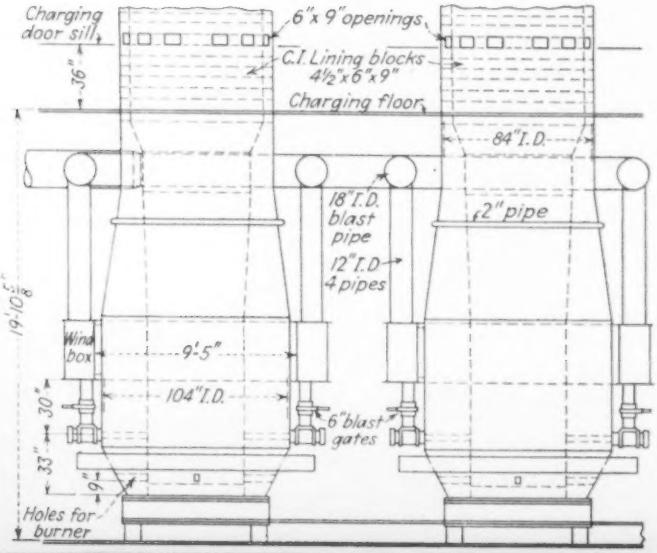
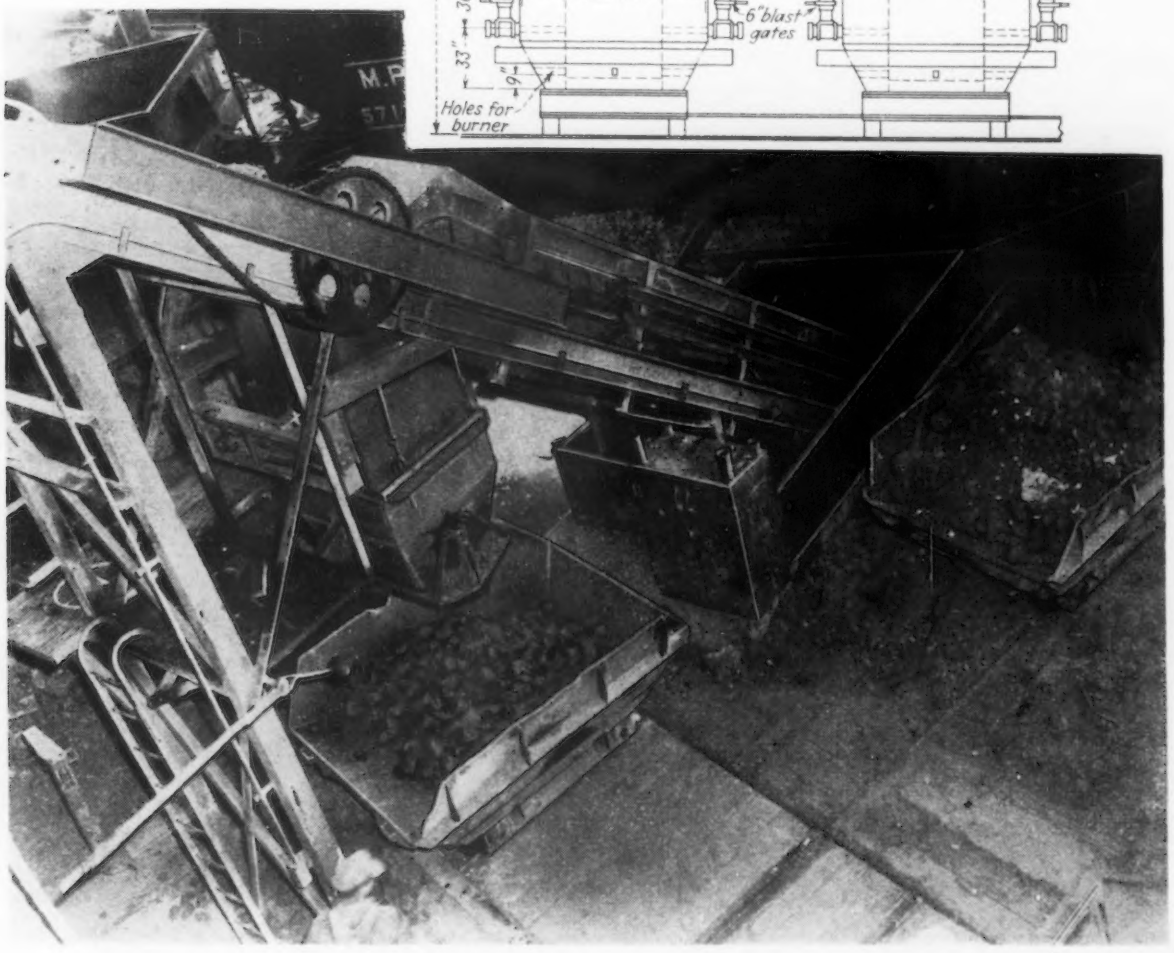
FIG. 5—Sketch showing construction details of the two cupolas illustrated in fig. 4.



BELOW

FIG. 6—Coke conveyor, railroad car of coke and skip hoist buggy being loaded for charging into cupola at Sheffield Steel Corp.



indicates, when compared with the Stanley Works conversion cost, that about half the total cost of a nonmechanized installation is due to scrap make-up and charging.

A typical skip-hoist car charge contains 3000 lb scrap and cast, 100 lb limestone and 400 lb coke (with booster charges of coke as required). Calculated over the period of a year (1947), the average charge runs about 70 pct heavy melting scrap, 30 pct cast scrap, 5:1 coke ratio, and 67 lb limestone per ton iron.

The present charging setups at Central Iron and Steel and The Stanley Works are admittedly unsuitable and skip-hoist installations are soon to be constructed, see fig. 3. Wartime conditions and need of speedy delivery were factors influencing The Stanley Works in installing charging buckets now in use. Currently, at the latter plant, the raw materials, carefully weighed, are placed into round, bottom discharge buckets, wherein the cone-shaped, one-piece bottom is attached to a center stem extending upward through the center of the bucket and suspended from the hoisting mechanism. After each bucket has been charged with approximately 300 lb coke or coal, 2000 lb scrap and 65 lb limestone (and silicon if necessary), it is hoisted from the scrapyard to the cupola charging door and is rested on a rim support in the cupola. Lowering of the hook of the hoisting mechanism lowers the cone bottom and allows the raw materials to dribble out.

A similar setup is in use at Central Iron and Steel, except that rectangular shaped car containers are used instead of round buckets. This allows greater flexibility as regards length of scrap used. These containers are hoisted to the charging floor, rolled on tracks to the cupola, and then tipped to allow the charge to fall into the charge door opening and down the stack.

The coke ratio seems to vary from 5:1 to 7:1. Byproduct coke is the desirable fuel, although Central Iron and Steel and The Stanley Works have found it necessary to use beehive coke as an emergency measure. This latter type coke possesses a high sulfur content, high ash and low carbon, and consequently is not conducive to optimum cupola performance.

The operations as described herein, though admirably serving the purpose intended, are by no means established as standard. The cupola installations at Sheffield Steel Corp. have been in use for about 10 years, while The Stanley Works and Central Iron and Steel are comparative newcomers. Changes in equipment construction and modifications to operating procedures are continually being made in an effort to increase productivity. At Central Iron and Steel Co., for example, a cupola was recently installed,[2] containing several unusual features, including (1) water cooling of cupola bosh lining, (2) a departure from conventional cupola tuyere design, (3) increased blast pressure, (4) carbon paste well bottom, and (5) permanent bottom construction. This unit is intended for some 6 months' uninterrupted operations, between refractory repairs.

Experiments involving the use of anthracite coal (instead of coke), oxygen enrichment, carbon block refractories and wetting down of the charge are also underway or planned for the future. For the past four months The Stanley Works has successfully used anthracite coal for 35 pct coke charge as a replacement for coke. While the use of coal has resulted in higher windbox pressures and slightly more attack on refractories, it has, on the other hand, enabled them to maintain higher carbon content in the metal and more uniform metal temperatures than when using 100 pct coke for fuel.

[1] *A. W. Gregg, "Utilizing Cupola Metal in Open-hearth Charge," steel, July 19, 1948, p. 116.*
[2] *E. S. Kopecki, "Water Cooled Cupola Features Duplexing Plant,"* THE IRON AGE, *Aug. 19, 1948.*

Round Ingots Reduce Steelmaking Costs

THE use of round ingots in the production of high-alloy steel has been applied almost exclusively in a German steel plant for the purpose of reducing production costs. A discussion of this practice at the Deutsche Edelstahl Werke in Krefeld, is presented in the *Iron and Coal Trades Review*, Aug. 6, 1948, based on a report by R. Scherer of D.E.W.

Scherer states that while most plants using square ingots attempt to remove existing defects in the billet stage, research has shown that all defects can be removed more economically in the ingot stage. Since the round ingot requires little more than turning on the lathe in the case of superficial defects, the working of a round ingot is cheaper than the square type requiring milling or grinding.

There is said to be very little difference metallurgically, between the two types; with the advantage, if any, associated with the round ingots because of uniform conditions of solidification giving more regular crystallization. The general complaint about round ingots is a greater tendency to longitudinal tears, although experience has indicated that ingots up to about 5 tons can be obtained without the appearance of longitudinal tears. Tearing has been found to depend largely on proper deoxidation of the steel and temperature and rate of pouring, with round ingots requiring a more exact quality control over these factors than square ingots.

Use of Monel In Iron and Steel Pickling Equipment

PREDICTING the performance of corrosion resistant alloys in sulfuric acid pickling baths for iron and steel is difficult, for different baths contain varying amounts of other chemicals and operate under varying conditions of temperature and agitation. As a result, laboratory test data obtained with pure solutions are often inapplicable or misleading. However, conclusions based on plant experience with Monel equipment are possible, according to a technical bulletin of the International Nickel Co., Inc., New York.

Acid concentrations normally are 5 to 15 pct by weight H_2SO_4 and operating temperature is usually from 140° to 200°F. Organic inhibitors, to prevent too rapid attack on the steel, are often added.

Standard pickling conditions are favorable to Monel because the reactions consume oxygen that may be dissolved in the acid and because hydrogen evolution maintains the solution in a reducing condition. In addition, Monel handling units are protected galvanically by the steel parts with which they are in contact. As a result corrosion rates are very low, and it is not unusual to find Monel pickling crates still in good condition after 10 to 15 years service. Annual weighing of crates and baskets has shown an average equivalent decrease in metal thickness of 0.0002 to 0.012 in. per yr.

The copper content of Monel is low enough that copper flash is avoided when it is used in the pickling of steel for enameling or carburizing. However, Monel tanks are not used for this purpose as tank corrosion rates are higher than for crates due to the lack of galvanic protection.

Monel also is not subject to the dezincification that often occurs with alloys containing considerable amounts of zinc or aluminum. Consequently Monel tie rods maintain high unit strength throughout the useful life as pickling tank. A comparison of a Monel rod with others which have suffered dezincification is shown in the accompanying illustration and in table I.

Solid Monel pickling tanks, or steel tanks lined with a sufficient thickness of Monel, have given satisfactory performance in installations where heating is supplied by closed coils handling steam or hot gases. Such tanks show corrosion rates of 0.01 to 0.03 in. per yr, depending on continuity of use, and with greatest attack occurring usually at the liquid line.

Where tanks are heated with live steam or by submerged combustion burners, however, experience with Monel tanks has not been satisfactory. Impingement of the steam or gases on the tank surfaces and the high acid velocities resulting, tend to cause unusually high corrosion rates in the lower parts of the tanks.

Closed heating coils of Monel are used to a considerable extent. These may be heated with either steam or hot combustion gases. In the latter case it is well to avoid fuels of high sulfur content since the presence of sulfurous acid in the gas condensate attacks the coil. When using Monel coils in lead-lined tanks, contact between the two in the acid solution should be avoided since Monel is sometimes anodic to lead.

When Monel is used for continuous or batch type pickling drums which are not completely immersed in the acid bath, the exposed surfaces of the drum are covered with a thin layer of highly aerated acid and accelerated corrosion occurs. Furthermore, the drums may be only partially loaded so that the actual area of contact between the drum and loading may be too small to provide suitable galvanic protection. If Monel is used for such drums, the unit should be immersed completely in the acid, or, if suspended partly or entirely above the acid surface, the tank and drum should be enclosed with a sealed hood. Where this is not practicable, Hastelloy C or one of the nickel-chromium-molybdenum-iron alloys may be more suitable. The latter alloys are used to a considerable extent for pumps, valves and fittings handling spent pickle liquor.

TABLE I

Maximum Loads Sustained by 1-in. Diam. Tie Rods After Exposure to Pickling Solutions for 1 Year

Material	Maximum Load (Average of 4 or more Rods)	Remarks
Monel	52,800 lb	Metal stretched
Material A	15,300 lb	Threads stripped
Material B	14,500 lb	Threads stripped

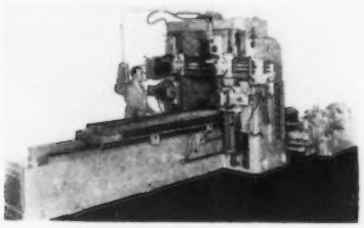
New Production Ideas .

For further information on any of the following items, check item number on card facing page 86 and drop card into mail.

A hydraulic shaper-planer, a zinc and aluminum diecasting machine having 800 tons locking pressure, a car wheel de-mounting press, shears for cutting mild steel plate, a metal turning lathe, grinders and polishers, a two dip hand-operated degreaser, a steam tempering method, and a portable blasting-spraying gun are described this week, together with various plant service and material handling devices.

Hydraulic Shaper-Planer

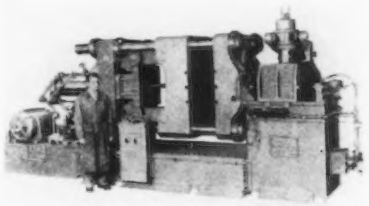
1 THE speed of a shaper and the accuracy of a planer are combined in a new shaper-planer. Hydraulic pressure is used for the feeds and the table drive. Known as the double housing Hy-Draulic shaper planer, it has been designed to meet the demand for a fast, small size planer to handle the production of heavy work that is too small for a standard planer and too large for a shaper. Design features include dual controls for rail head and table, and it can be supplied with two tool heads with automatic tool lifters for the crossrail and two side heads with automatic tool lifters, the second crossrail head and side heads available as extra equipment. Sizes



available are 24 x 24 in., 30 x 30 in., and 36 x 36 in. Stroke length sizes of 6, 8, 10 and 12 ft are built in each size. *Rockford Machine Tool Co.*

Diecasting Machine

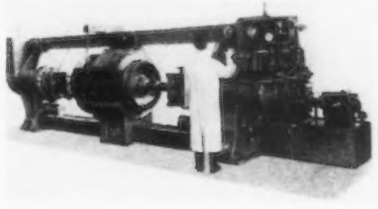
2 A DIECASTING machine, having 800 tons locking pressure will form diecastings in zinc weighing up to 30 lb and in aluminum weighing up to 10 lb. Extremely high injection pressures are utilized, reaching as much as 40,000 psi. Having a die space of 40 x 25 in. between tie bars and 17½ in. of die separation, large dies can be accommodated and castings having a deep draw are easily produced. The machine is hydraulically operated and electrically controlled. Electric push buttons control the diecasting cycle. Speed of



operation averages three to four zinc diecasting cycles or two aluminum casting cycles per min. Three models are available: A gooseneck plunger type machine that produces zinc, lead or tin diecastings and has a selfcontained melting pot and furnace incorporated within the frame. For production of aluminum, magnesium or brass diecastings, the machine has a cold chamber hand ladling injection unit. The third model is a convertible unit requiring a minimum of changeover time. *Kux Machine Co.*

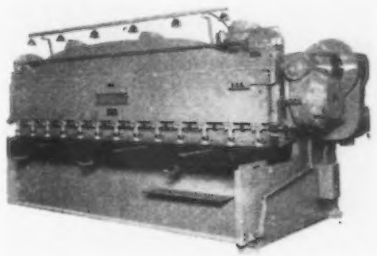
Wheel De-Mounting Press

3 A NEW production de-mounting press is capable of handling all types of wheel sets without the use of spacers. The new double-end machines, with 54-in. clearance between bars and stroke at each end of 26 in. are available in 400 and 600-ton sizes. It is claimed that these specifications are adequate to de-mount all freight, passenger, locomotive tender and truck wheels at a set-a-minute rate. Single station push-button controls initiate all movements of the press. Rapid traverse is provided for all idle portions of stroke. The press can be used for mounting car wheels and axle assemblies and all gages and recording instruments for this purpose are standard equipment. *Watson-Stillman Co.*



Shear

4 THE outstanding feature of the newly designed all steel shear with a capacity of ¼ in. mild

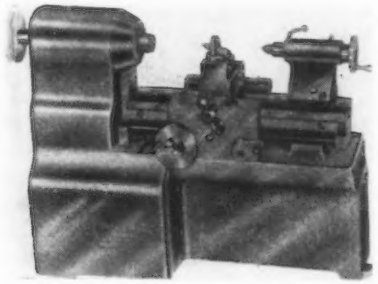


steel plate in lengths up to 12 ft is the low rake or shear angle of the upper knife. This low rake on the shear insures clean shearing with a minimum of twist, bow or camber, especially on very narrow sheared strips. Shears with the special low rake such as illustrated can shear 10 gage strip, ¼ in. wide and 10 ft long without twist. Sheet stock can be converted to strip by this shear, yield a product accurate and true for forming, punching, drawing, or other operations. Another feature is the light beam shearing gage. Light intensity has been increased 10 times by the use of GE projector flood lamps. Table lighting has also

been increased. The light beam shearing gage is useful when shearing to a scribed line in the production of gussets and other irregular shapes. *Cincinnati Shaper Co.*

Metal Turning Lathe

5 A NEW metal turning lathe, the Duolathe, for the machine shop, the tool room and the tech-



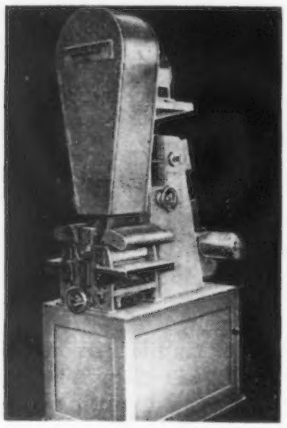
nicians laboratory is compact, measuring 10½ in. long, 7¼ in. high and 3¾ in. deep. These measurements include a selfcontained, universal motor mounted in the base. In addition to the motor, the regular equipment includes foot rheostat, adjustable tailstock, tip over tool rest, headstock and tailstock centers, driver plate, headstock tapered and threaded sleeve, and power driven carriage with cross slide and tool post. The lathe has a speed range from 100 to 3000 rpm, and is equipped with back gears which, it is reported, can increase its power as much as twenty times. *Small Machines, Inc.*

Heavy Duty Squaring Shears

6 POWER squaring shears designed to withstand the strains of cutting heavy material, have base, table, slide and top cross tie, of rolled steel plate. The eccentric shaft is forged of high-carbon steel, with eccentrics an integral part of the forging, and heat treated for added strength and wearing qualities. Blades are high-carbon, high-chromium steel. The upper blade can be adjusted horizontally for alignment. Hydraulically-operated automatic hold-downs prevent creeping without adjustment of the plate, regardless of thickness. Motor pulleys, V belts and belt guards, 50-in. front gage and 24-in. motorized back gage are standard equipment. Five new models with capacities of 6 ft x ⅜ in., 10 ft x ⅜ in., 6 ft x ⅝ in., 10 ft x ½ in. and 10 ft x ¾ in. in mild steel have been added to the line of power squaring shears manufactured by *Columbia Machinery & Engineering Corp.*

Polisher and Grinder

7 AN abrasive belt polisher and grinder, designed for automatic finishing of flat stock such as handsaw blades, and strip steel up to 10 in. wide, is built in three subassemblies—the base, sanding unit, and feed mechanism. The machine features straight-through arrangement for high speed production, allows feeding manually, by coil unwinding and winding machines, or



by conveyer. It has infinitely variable feed from 20 to 60 fpm. Screw adjusted feed rolls take stock of any thickness up to 1 in. The machine can be used as an individual unit or in tandem and is built by *Curtis Machine Co.*

Bench Type Grinder

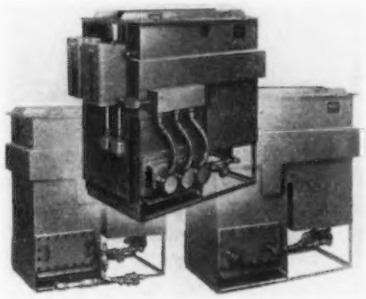
8 DESIGNED for grinding, buffing, tool sharpening, polishing, wire brushing, and light production and tool room work, a new bench type grinder, called Grindmaster, has been announced. The ¼-hp grinder is furnished with two 6 x ¾-in. wheels, one course, one fine. Adjustable tool rests permit contact with the wheel at any desired angle. The motor is single phase, 110 v, 60 cycle. Operating speed is 3450 rpm. *Torq Electric Corp.*

Steam Tempering

9 SCALE-FREE tempering and strain relief of metal parts including high-speed steel tools, cast iron, sintered powdered iron compacts and nonferrous alloys can be done by the Steam Homo method. Alloys are treated at temperatures up to 1150°F. This method is said to yield steel parts with a uniform blue oxide finish, when a protective steam atmosphere is added to the Homo forced-convection heating and its Micromax temperature control. Parts are said to be free from scale, have improved machinability, increased resistance to corrosion and wear, and to be easier to clean for plating. Greater density and hardness is claimed for powdered iron parts after steam treating. Steam from a process line or small boiler is fed into the work chamber through an inlet in the bottom of the furnace. *Leeds & Northrup Co.*

Hand-Operated Degreaser

10 RAPID, safe and thorough cleaning of medium-size metal parts is claimed for a new two-dip hand-operated degreaser. The unit can be heated by steam, gas, or electricity, or a combination of gas and steam, or gas and electricity. Standardization of main body construction permits conversion from one type of heating to another. The degreaser employs the immer-



sion-solvent-vapor degreasing process, leaving all surfaces, external and internal, clean and dry. To operate, parts are lowered into boiling solvent, transferred within the machine to a cool solvent rinse compartment, and after a few seconds, removed through the solvent vapor zone. The Perm-A-Clor solvent used is non-inflammable, and cannot burn

or explode. Production capacity is rated at 1000 lb of steel parts per hr. *Detrex Corp.*

Small Tools

11 SMALL tools having shanks ½, ⅝, ¾ and 1 in. square and featuring a flat tip that is mechanically held to the steel shank with a countersunk flat head cap screw and socket nut, make up the new line of Kendex tools. Tips are made in square, round, triangular, and pentagonal shapes. The round tips are for machining cast iron, the other styles for machining steel, cast iron, and other metals. Advantages claimed for the tools are: Tips are indexable; grinding is eliminated; and mechanical-holding eliminates brazing strains. *Kennametal, Inc.*

Chromium Plating Service

12 LOW cost bulk chrome plating parts such as screws, rivets, screw machine parts, and stampings can be done without racking throughout the entire plating cycle. The chromium coatings produced are bright, lustrous and are said to compare favorably with buffed chromium finishes. *Midwest Chrome Process Co.*

Gear Motor

13 AXIAL air gap motors recently introduced are now available as gear motor reducers.

Space and weight reduction feature these motors, which are less than half the size of conventional type motors and one-third the weight. The motorgear employs two ratios of single helical gears with hardened teeth arranged in gear trains. Planetary gearing is not employed. Motor and gear shafts are parallel, with centerline of the motor coinciding with the centerline of the low speed shaft. Available in ratings from ¾ to 10 hp, these units are symmetrical in design with no separate right or left hand assemblies. The motor may be removed from the gear housing and run separately. *Fairbanks, Morse & Co.*

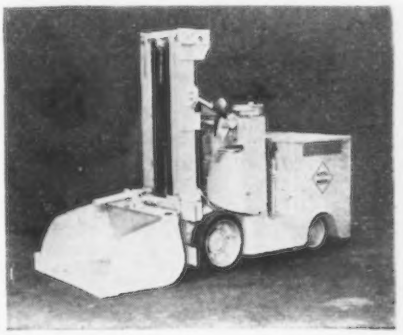
Crane Cab Cooler

14 SUMMER cooling, winter heating, and continuous ventilation of crane cabs are possible with a small air conditioning unit designed to protect crane operators against hazards in factories and foundries. The unit also removes dirt and dust, gas fumes and odors

from the air discharged into the cab. It is designed for operation in ambient temperatures up to 130°F, maintains cab temperatures at 80° to 85° in the summer, and 68° to 72° in the winter. A vertical unit, 5 ft 5¾ in. high x 2 ft 2 in. x 2 ft 9 in., it can be mounted alongside a crane cab or placed on adjoining catwalks. Only a power supply line is needed for its installation. *Dravo Corp.*

Lift Truck and Scoop

15 AN electric power industrial truck equipped with a special scoop for picking up, transporting, delivery or piling loose materials, has been announced. The scoop is attached to the truck's tilting and elevating mechanism and all controls are centralized at the driver's station. A simple tripping device on the scoop provides for rapid discharge of the load. Flexibility of the machine facilitates loading or emptying the scoop at floor levels or at any height up to 117 in. Ca-



pacity area of the scoop is 12 cu ft; capacity weight of load is 2000 lb. Speed of the truck with load ranges up to 5½ mph. *Elwell-Parker Electric Co.*

Cast Iron Welding

16 NICKELCAST is a 100 pct nickel electrode for producing machinable welds on cast iron without preheating the metal. The welds are machinable both in the deposit and line of fusion and may be drilled, tapped or machined at any point in the weld zone. This electrode is claimed to be free from fluorides and not to produce injurious gases. The coating is insulated to prevent arcing through when working in confined quarters. The electrodes are intended for use with ac or dc current, are available in 3/32, ⅛, 5/32 and 3/16 in. diam. *Hobart Bros. Co.*

Recording Vibrometer

17 A RECORDING vibrometer that measures and records frequency, displacement, and wave shape of mechanical vibration has been developed for application in testing reciprocating and rotating machinery within a vibration frequency range of 10 to 120 cycles per sec. Both steady-state and transient vibrations are recorded. A prod extending from one side of the vibrometer is set in motion when held against a vibrating body. This motion is amplified by a cross-spring arrangement and transmit-

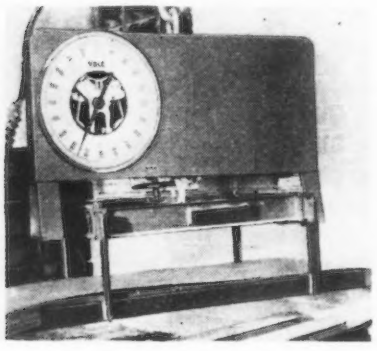
ted to a stylus which inklessly records the vibration on wax paper. Another stylus produces a timing mark near the edge of the wax paper every one-third of a second. Both chart speed and the interval between timing marks are governed by a synchronous motor operated from a 115-v, 60 cycle power supply. Chart speeds of 1 and 3 in. per sec are provided. This instrument may be operated in the hand or on a fixed base. Weight is 7 lb and it is less than 8 in. long. *General Electric Co.*

Plater's Computer

18 A NEW Jerstedt plater's computer makes it possible to determine in a few seconds: Plating time required to deposit a given thickness of any metal; current density required to produce a deposit of given thickness; thickness of deposit resulting from an established plating time at a known current density; usual cathode efficiencies of all modern electro-plating solutions; ampere minutes per sq ft to deposit 0.0001 in. of all commonly used solutions, at usual cathode efficiencies, and temperature conversion scale, degrees F and C. The computer measures 6¼ x 1½ in. and is available from *Hanson-Van Winkle-Munning Co.*

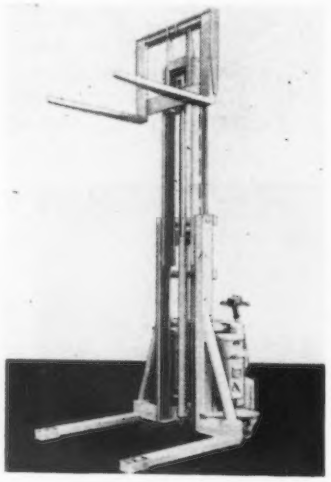
Crane Scale

19 TO permit accurate weighing without interruption in flow of materials, a scale has been designed which reduces to one operation the usual procedure of picking up the lift, moving it to a scale, lowering it to a weighing platform, and relifting for further transportation. This crane scale is suspended between crane hook and load and can be fitted with a variety of grabs and attachments. All containers, and chains for carrying load are either back-balanced or tared off on the scale lever system to permit net load to be read from dial. A shockproof mechanism permits application of shock loads without damage to weighing mechanisms. *Yale & Towne Mfg. Co.*



Lift Truck

20 DESIGNED for moving and high stacking materials on skid platforms, pallets, or sectional bins, a telescopic feature on the Jack Stacker allows passage through doorways and under trusses or other overhead obstructions. Counterweighted, straddle-type, open end base, and platform type models are available for handling single or double-faced pallets as well as skids or platform-type containers. It is not necessary to stop truck to raise or lower level of lifting carriage. Forward and reverse speeds, hydraulic lifting and lowering, mechanisms and gear-drive traction unit are operated from the handle head. The truck is electrically operated, has capacities up to 4000 lb, and is manufactured by *Lewis-Shepard Products, Inc.*



Blasting-Spraying Gun

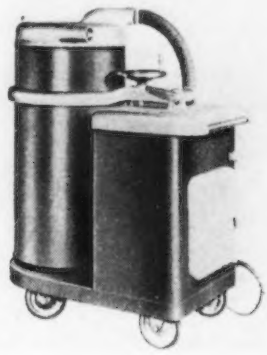
21 AN air-operated, portable abrading or solvent gun has been designed for efficient surface preparation and cleaning in finishing or semi-finishing shop operations. No buffing marks, grooves or ridges, scuffed, gouged or uneven surfaces are left, it is claimed. This gun reaches inaccessible places such as wheels, drip moldings, grill work, fins, corners, crevices and close fittings. It is equipped for sand blast operations or spraying solvents and liquids and is operated by air line pressure. Two nozzles supplied include an abrading case-hardened nozzle for blasting and a solvent nozzle for oils and chemicals. Maximum air consumption is 9½ cu ft per min at 100 to 150 lb pressure. *Engineered Products Inc.*

Saw Sharpening Fixture

22 A FIXTURE that holds and turns circular saws to insure precision sharpening and keeping the saw perfectly round can be mounted on the same base with the power driven grinding wheels, making the saw sharpening equipment a selfcontained unit. The fixture is designed to sharpen three types of circular saws by using only two different shaped grinding wheels. One of the wheels has a 45° angle on one side and used for sharpening cross cut or fine teeth on combination saws. The other wheel is 5/16 in. wide with a radius for use on tip saws and for large teeth on combination saws. The fixture brings the saw teeth up to the grinding wheels at right angles. *Treyco Products.*

Industrial Vacuum Cleaners

23 HEAVY - DUTY industrial vacuum cleaners combine blowing and suction, and pick up wet or dry substances without harm to the filter or tank. The unit can be changed instantly from suction to blowing by a lever. Built in four sizes, powered by 2, 3, 5, and 7½ hp motors, these cleaners have static water lifts ranging from 60



3 TONS N-A-X HIGH-TENSILE
4 TONS CARBON SHEET STEEL

Switch to N-A-X HIGH-TENSILE. Utilize its greater strength and corrosion resistance by designing lighter sections. Boost production per ton as much as 33%. Get a stronger, longer-lasting finished product.

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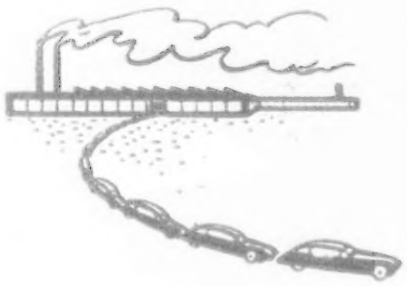
MAKE A TON OF SHEET STEEL GO FARTHER
Specify—
N·A·X
HIGH-TENSILE STEEL

The "New Arithmetic in Steel"
- makes every fourth part
a Bonus part

Assembly Line . . . WALTER G. PATTON

• Extensive tooling is required for the new automatic transmissions . . . Diecasting cases require good finish . . . Carbide tools used wherever possible.



DETROIT — Large-scale production of automatic transmissions is going to require a lot of new tooling. This was made crystal clear this week at the SAE National Production meeting and clinic in Cleveland where Fred C. Pyper and A. G. MacDougall of Buick Motor Div. presented a paper, "The Manufacture of the Dynaflow Transmission."

The paper takes on added significance since Saginaw Transmission Div. of General Motors is presently reported to be tooling for an automatic transmission for Chevrolet. It has also been indicated that new quotations have been requested by the Detroit Gear Div. of Borg-Warner Corp. It is believed these inquiries are for tooling to be used for a new automatic transmission for Ford. This unit is scheduled to make its initial appearance on the Lincoln some time during 1949.

Buick material and tooling requirements for its Dynaflow transmission have been extensive. For example, to manufacture and meet the requirements for accurcay at its present projected volume, Buick found it necessary to purchase 493 new machines. In addition, Buick had to relocate, retool and in some cases rework 180 other machines. Also, a large amount of foundry equipment, forge and sheet metal presses and automatic screw machines were retooled to produce Dynaflow parts.

Many precision finishing machines are included in the installation. According to the authors, the Dynaflow project includes the products of more than 100 different manufacturers.

It should be emphasized that the above figures represent only the equipment required for the present Roadmaster model. The authors say Buick is presently well along with tooling for the adaption of Dynaflow to other Buick models, and the total quantity of machines required is now greatly in excess of the earlier requirements mentioned above.

The Dynaflow transmission, it was disclosed, has a total of 354 parts. It is 24 in. long and weighs 217 lb compared with 170 lb for the conventional fly-wheel, clutch and transmission unit.

In their paper, the authors described the detailed operations of milling and reaming the fly-wheel housing transmission mounting face; machining the reaction gear including the broaching of nine slots; boring and facing the transmission case; rough turning the rear planet carrier; finish boring the shaft holes in the planet carrier assembly; and gear shaping the reverse ring gear on a No. 10 Fellows rotary gear shaper.

The paper points out that the circulation system of the Dynaflow transmission uses oil at pressures up to 180 psi. Therefore, the aluminum diecasting cases require exceptional finish and flatness of mating services. Bores must be free from porosity. Also, the mating surfaces must have fine parallelism and squareness with the major axis of the assembly. In rough turning the rear planet carrier the operation is tooled entirely with solid carbide turning tools. The material is SAE 5140 forged steel annealed to 420-440 BHN.

SURFACES of the forgings are rough turned on a 16-in. Fay automatic lathe at surface speeds varying from 125 ft per min in the small diameter to 500 ft per min on the large 5-in. diameter. Approximately 3 lb of metal is removed in 36 sec.

Buick engineers are employing round carbide tools wherever possible since these tools can be rotated when the cutting edge becomes dull to present a new, sharp edge to the work. When the entire periphery of one end becomes dull, the tool is turned upside down in its holder without affecting the setup in any way. In this manner 12 sharp cutting edges can be employed on each round tool before resharpening is required.

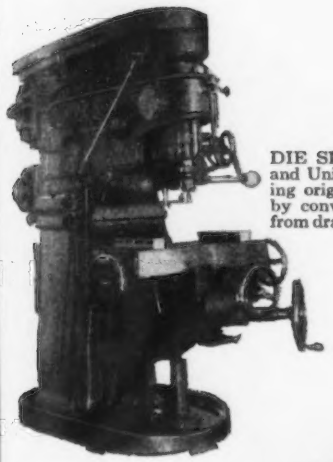
The same procedure is being used on square tools and here eight sharp edges can be used before resharpening becomes necessary.

The reverse ring gear is cut on

NEW TRIO: *Willys Overland Motors recently introduced three new models, all lineal descendants of the Army Jeep. Left to right are: the Jeep Utility Wagon with overdrive and back seats removed; 4-wheel-drive Station Wagon for traveling through rough terrain and the 6-cylinder Station Wagon powered by Willys' new engine. No definite plans for passenger car production have been announced.*

To any maker of molds for plastics

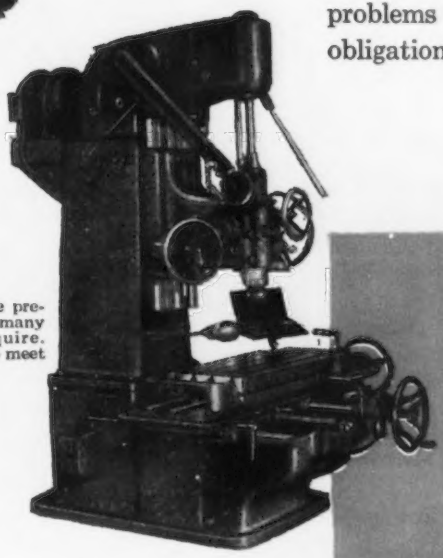
A single source can now supply all equipment



DIE SINKERS — Plain and Universal — for making original molds or dies by conventional methods, from drawings or prints.

Here are four P&W precision machines — selected from a complete line — that are universally recognized as No. 1 equipment for the up-to-date mold maker. This equipment gives the mold shop the fastest means for cutting the complicated precision cavities the plastics industry demands. Each machine is built to P&W's familiar standards of precision and quality — each is designed for utmost performance and economy on its own specialized work. In addition, P&W offers the cutting tools required, including a complete line of burs.

For the mold maker who is interested in delivering better molds, faster . . . made more economically at a better profit . . . P&W has a convincing story. P&W understands mold-making problems and how to conquer them. Let's talk it over — no obligation, of course.



JIG BORERS, for the precision-boring that so many intricate molds require. Three machine sizes to meet every requirement.

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HEADQUARTERS FOR
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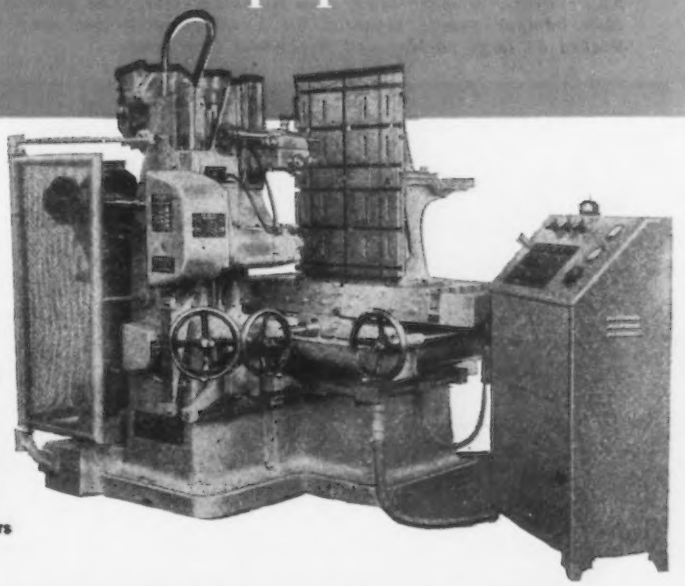
KELLERFLEX MACHINES — flexible shaft equipment for efficient finishing and polishing of molds. Fourteen machine models plus a complete line of attachments and accessories.

KELLER MACHINES, for cutting intricate plastic molds from easily-made master forms, using automatic tracer control . . . the modern way to get into production quickly.



Also . .

Vertical Shapers
Vertical Die Grinder
The new P&W Jig Grinder
Automatic Duplicating Machines
Keller Cutter and Radius Grinder
Small Tools . . . Gages . . . Keller Burs

"There is no better-paying investment than the right tools for the job"

a No. 10 Fellows rotary gear shaper. Each work-station of the giant machine is a complete gear cutting unit with individual motor drive and controls. The machine can be rotated in either direction or reversed from the normal direction of operation.

Having a gear cutting unit complete at each station has the advantage that once a gear starts to cut, the operation will continue to completion. Meanwhile, if a cutter becomes dull and it is desired to stop a particular station, the controls on the station permit adjustments to be made as on any single spindle machine.

The Fellows No. 10 gear shaper installed at Buick is 11 ft 6 in. high, 12 ft 4 in. in diam and weighs 85,000 lb. This model attracted considerable attention at the Machine Tool Show in Chicago several years ago.

•

Industrial Mobilizing Takes Step Forward By Executive Training

Detroit

• • • **Industrial mobilization** took a long forward step this week when 230 key industrial executives and reserve officers of the Army, Navy and Air Force assembled at the Rackham Educational Memorial Building in Detroit, to begin an intensive 10-day training program that is a condensed version of the 10-month course now being given at the Armed Forces Industrial College in Washington.

The course is designed to improve cooperation between industry and the Armed Forces and to lay the groundwork for industrial mobilization in the event of a national emergency. Two sessions of 2 hr each will be held each day during the 10-day period Oct. 18 to 29.

Subjects to be discussed include critical and strategic materials; economic intelligence; distribution logistics; manpower, production; contracts and renegotiation; material controls; small plants; machine tools; technological progress; impact of new weapons; dispersion; and plant security.

Officers of the Army, Navy and Air Forces will come from the Armed Forces Industrial College in Washington to conduct the course.

The 150 Detroit industrialists chosen to attend the sessions were selected by a civilian committee composed of top flight Detroit industrialists. All major auto producers and parts suppliers have cooperated with the Detroit Board of Commerce and the Armed services in making arrangements for the series of meetings.

Following the Detroit industrial mobilization course similar courses will be given in other industrial centers of the country, including Philadelphia, Atlanta, Houston, St. Louis, Chicago, Denver and other cities.

Participating in the opening sessions of the course were Maj. Gen. John P. Lucas, commanding the Fifth Army, Rear Admiral Lucian M. Grant of the Naval Bureau of Aeronautics, and Maj. Gen. Robert M. Webster, commanding the First Air Force.

At the opening session merit awards were presented to 29 Michigan scientists and industrialists for outstanding contributions during World War II. Among those receiving the President's Certificate of Merit were four members of the faculty of the University of Michigan and Edwin T. Todd, Truck and Coach Div., General Motors Corp. Among those receiving the Army-Navy Certificate of Appreciation were Alfred L. Boegehold and John O. Almen, General Motors Research Laboratories; Corydon H. Smith, GM Truck and Coach Div.; William W. Farr, The Budd Co.; and Robert B. Schenck, Buick Motor Div., GM Corp.

•

Honeycomb Grille On Frazer Is a New Feature

Detroit

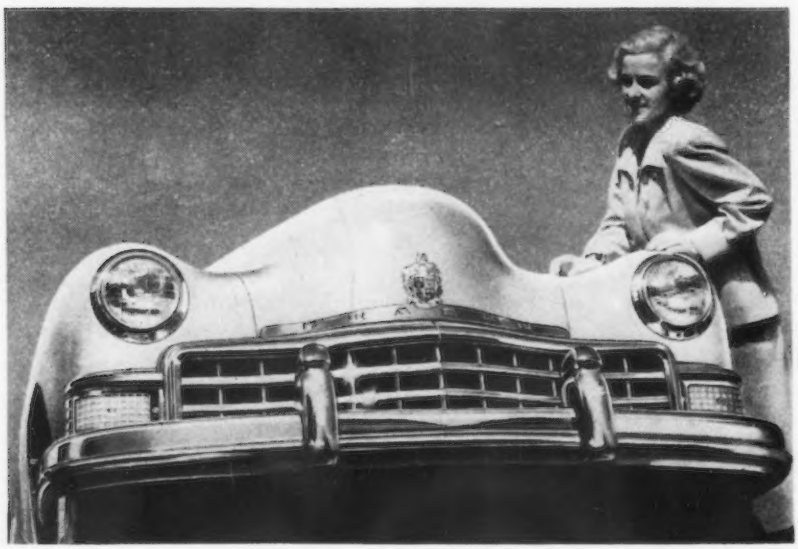
• • • **Closely paralleling** the engineering and styling advances in the new Kaiser models (IRON AGE, Sept. 30) the new Frazer and Frazer Manhattan models were introduced this week.

The new cars feature a honeycomb grille flanked by parking lights and directional signals. A chrome "crease molding" which extends the full length of the car below the window opening gives an impression of a low silhouette. The "high tail," a criticism of some of the earlier K-F models, has been lowered.

The Frazer which uses the same powerplant as the Kaiser is now rated at 112 hp. The additional 12 hp has been attained through the use of dual throat carburetion and dual-intake manifolding. According to Kaiser engineers, the present powerplant has a ratio of 1 hp per cu in. of displacement, said to be the highest of any of the standard mass-produced cars.

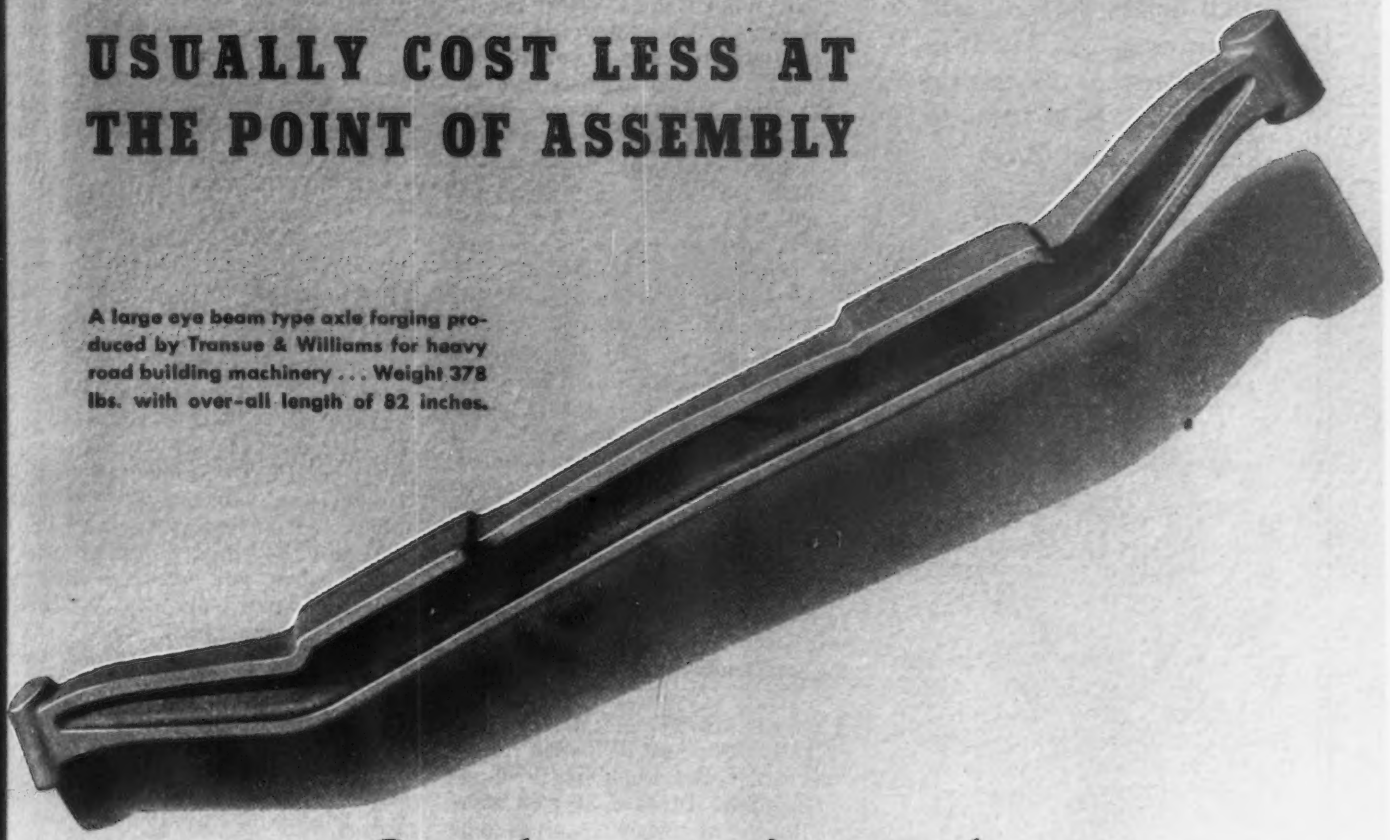
Other changes include an improved cooling system, redesigned tappets, more efficient crankcase ventilation and re-engineered chassis to give additional road clearance. Kaiser engineers say they have eliminated 52 parts with their new clutch mechanism.

NEW FRONT: *The grille used on the* 1949 *Frazer now being introduced by Kaiser-Frazer is much lower than its predecessor. The grille is shielded by twin bumper guards mounted on a one-piece wrap-around bumper and flanked by large parking and directional turn lamps.*



TRANSUE FORGINGS

USUALLY COST LESS AT THE POINT OF ASSEMBLY



A large eye beam type axle forging produced by Transue & Williams for heavy road building machinery . . . Weight 378 lbs. with over-all length of 82 inches.

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OVER 50 YEARS OF FORGING PRODUCTION EXPERIENCE

Washington . . .

EUGENE J. HARDY

• Truman's defeat inevitable . . . Some top-level incumbents are merely marking time . . . WAA deal with Kaiser still simmers . . . Studies underway to determine effects of pig loss to foundries next May.

WASHINGTON—Any one who has had any doubts about the election of Thomas E. Dewey as President of the United States has only to come to Washington to have these doubts dispelled immediately. A survey of the usual rounds of the government agencies in the past few weeks has hammered home to this reporter the widespread acceptance in government of defeat of the Truman Administration in November.

News is always available, if in no other form than the reams of press releases ground out daily by government mimeograph machines, but information of an interpretive nature, particularly anything concerned with long-range plans and policies is conspicuous by its absence.

The attitude throughout most of the government, except possibly in the State Dept., the military agencies, and the Economic Cooperation Administration, is that the present top-level incumbents are merely marking time. While it is not unusual for this state of affairs to crop up after an administration has been repudiated, it is a little unusual to find it as much as 6 weeks before the Presidential election.

One junior Cabinet officer puts it this way: "The interregnum between administrations has already set in." Cabinet officials are off politicing. Slightly lesser lights are looking for jobs and scurrying for cover. Agencies run by boards composed of Cabinet members, such as the National Security Resources Board, have not had a board meeting in months, and while staff work is proceeding satisfactorily central direction is not discernible.

While all of this despondency may seem to indicate that a Dewey victory will mean a rather clean sweep in the federal government, it is not likely that this will happen. In fact, THE IRON AGE has learned that Dewey lieutenants, not to be outdone by Mr. Truman, have approached many excellent career employees and held out to them the possibility of junior Cabinet posts and other important positions in the independent agencies.

WAR ASSETS ADMINISTRATION'S neat deal with Henry Kaiser for the Republic Steel-operated blast furnace is still simmering in the nation's capital, as a result of the Attorney General's approval. Mr. Kaiser now has what is considered a firm lease on the No. 5 stack but the portly Californian has continued to draw attention to the deal with his many outspoken statements attributing all sorts of motives to practically everyone involved in the deal, except War Assets Administrator Jess Larson.

The theory here is that if Henry would calm down and keep quiet, such annoyances as the Wheland Co's. legal manuever will come to naught and the furnace will remain the property of the Kaiser Co., Inc.

However, indications that Henry is still in for more trying moments on this deal come from both the legislative and executive branches. The surplus property subcommittee headed by Rep. Bender, R., Ohio, has been discussing the possibility of reopening hearings on the subject, but has not yet set a date. In the government agencies, studies are underway to determine whether anything can be done to mitigate the effect on small foundries, when an estimated 27,000 tons of foundry pig iron is taken off the market next May 1, the termination date of the Kaiser-Republic joint operating agreement.

These government sources point out that if Kaiser uses this furnace for the production of steelmaking iron entirely, the tonnage lost to foundries will only increase steel output about 0.6 pct, but would decrease foundry iron output by 5.5 pct, proportionately a much greater blow to small foundries than the increase in steel output would be a boon to steel-hungry industries.

Behind Wage-Hour Act Remedial Legislation

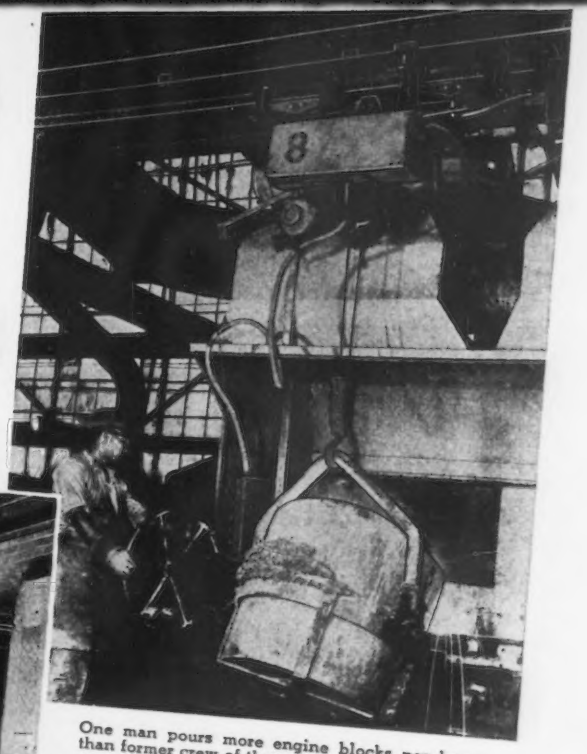
Washington

• • • Feeling that a crisis has arisen from the Supreme Court decision allowing employees to collect overtime on overtime, the Chamber of Commerce of the United States will actively support any remedial legislation at the next session of congress, according to Richard K. Lane, head of the Labor Relations committee of the chamber's board of directors.

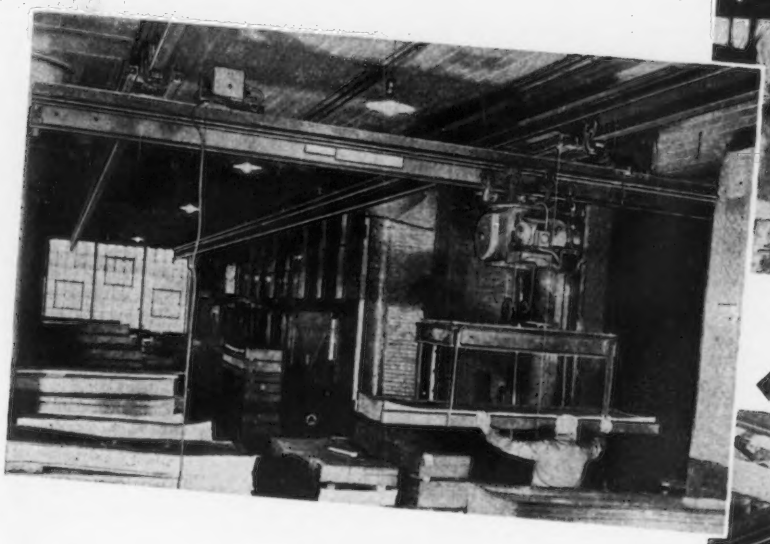
The Board noted the committee statement that it had found so many other deficiencies and inequities in the act that it had referred the entire matter to a subcommittee for further study and report.

Commenting on the Supreme Court decision of last June, the committee said: "This decision has had the effect of laying down a new formula for computing the regular rate of pay under the act which increases the liability of the employer who makes premium payments to his employees under

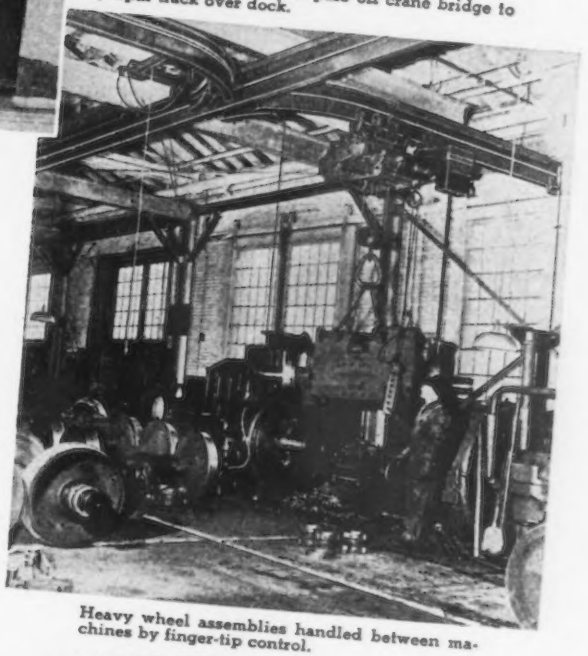
HEAVY LOADS GO "Up and Over" with finger tip control



One man pours more engine blocks per hour than former crew of three.



◀ Two ton loads of steel pass off crane bridge to spur track over dock.



Heavy wheel assemblies handled between machines by finger-tip control.

American MonoTractors do the hard jobs the easy way. They perform automatic "Up and Over"* handling operations with extreme accuracy and reliability. Finger-tip control assures accurate movement and spotting of the load. "Up and Over" machinery and equipment means no damage to machines or materials and no congestion in the operating area. More important, they eliminate back-breaking labor. The hazard of bad strains and hernia is gone.

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his employment or collective bargaining contracts.

"The first impact of this decision is being felt in the shipping industry, but the committee is of the belief that its hardships are likely to be felt before long by other segments of industry. The committee, therefore, expressed the unanimous opinion and recommended to the board that it authorize chamber support of whatever bill to remedy this situation appears to have the best chances of success."

•

Voluntary Allocations For Copper Ruled Out

Washington

• • • **Prospect that** copper for stockpiling purposes might be brought under the voluntary allocations program of the Office of Industry Cooperation has been ruled out.

This is evident following a meeting of representatives of the copper industry last week with the OIC and members of the Munitions Board. The general position taken by producers attending the meeting was that copper needs of the stockpile could best be handled on an individual company basis—as in the past.

Stockpile procurement goals for copper through next June 30 has been tentatively set at 90,000 tons by the Munitions Board. Officials were told that since the industry now knows what is required of it, this goal should be attainable.

As a result of the meeting, the Munitions Board has agreed to go along on this basis. It has warned, however, that if sufficient copper does not appear in sight—after a reasonable time—it will ask that new hearings be held. This would depend, of course, on whether a new Congress believes the program should be extended beyond next March.

•

No Mineral Industries Census Taken This Year

Washington

• • • **The Censuses of** Mineral Industries and Transportation covering the year 1948 will not be taken, according to Secretary of Commerce Charles Sawyer.

Public Law 671, 80th Congress, provided for such censuses to cover 1948 but the request for funds to carry out the projects was subsequently not approved by the Congress. The Comptroller General of the United States has held that under these circumstances the 1948 Censuses of Mineral Industries and Transportation have been eliminated.

A comprehensive national Census of Transportation has never before been taken. However, a Census of Mineral Industries has been taken once every decade from 1840 to 1940, the last such census having covered activities in the year 1939.

•

U.S. Imports More Iron

Washington

• • • **Imports of pig iron** into the United States in the first 6 months of this year averaged over 8000 tons per month, according to the Department of Commerce. In July and August they averaged about 15,000 tons. The 1947 total was 32,624 tons.

Among the new sources of pig iron is Germany, which has not been an exporter of pig iron to this country in a commercial way for many years. The largest shipper to this country so far this year is Holland. Other countries shipping iron to the United States include Belgium, France, Norway, Sweden and Australia.

Imported pig iron this year has been for steel mills, as well as foundries. In addition to pig iron, imports of scrap from Germany are expected to add to the supply of metallics in this country.

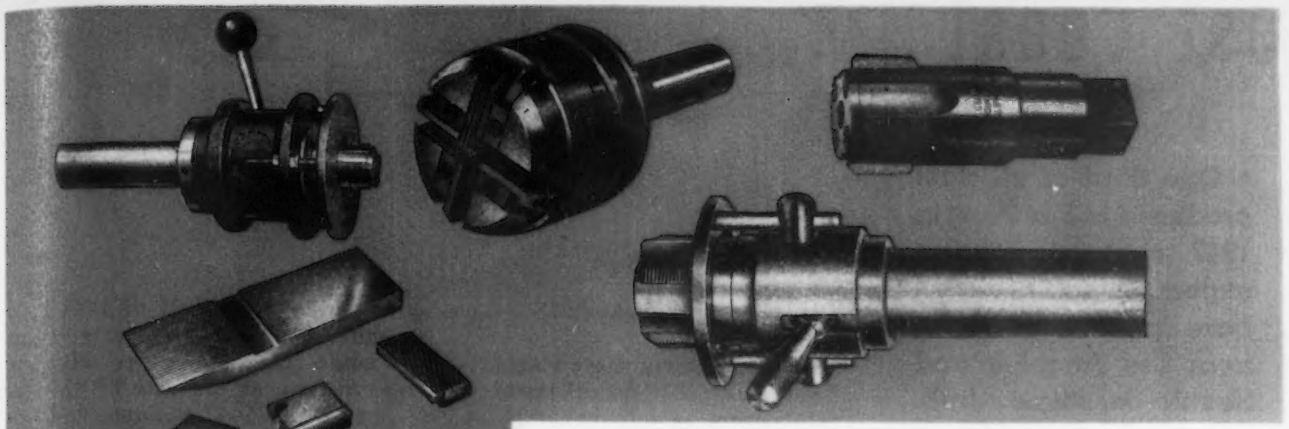
•

Tin Stockpile Increase

Washington

• • • **There'll be no** additional tin for beer cans or any other so-called nonessential products, despite the encouraging tin supply outlook, provided the Munitions Board and the Dept. of Commerce can resist the pressure for relaxation of controls. On the basis of presently anticipated supplies, with tin allocations maintained at present levels, it is felt that the tin stockpile can be increased substantially, possibly tripled by next June 30, the date on which tin controls will expire, unless extended. However, any relaxation on the use of tin will upset this program.

THE BULL OF THE WOODS — BY J. R. WILLIAMS



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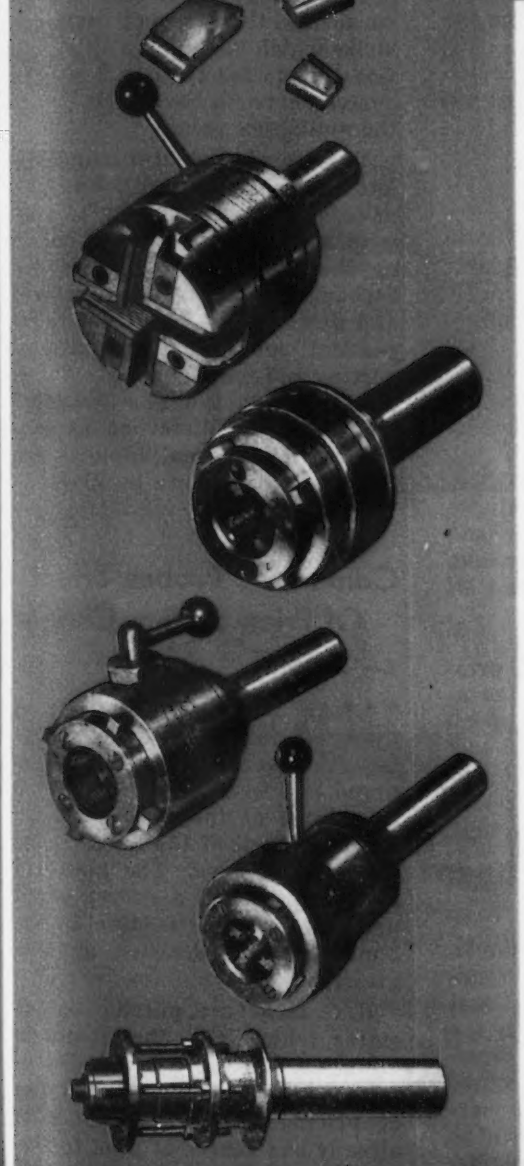

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West Coast . . .

OSGOOD MURDOCK

• One third of all steel produced in Far West in 1947 went into foreign export . . . Ingots, billets, bars, plates, shapes, from Los Angeles and Seattle constitutes bulk of shipments.

SAN FRANCISCO—Foreign export of steel products from Pacific Coast ports for 1947 totaled 758,222 tons according to the summary from the detailed sheets published by the Bureau of the Census from "Foreign Commerce and Navigation of U. S.—1947" for the West Coast customs districts.

Since the approximate finishing capacity of all steel plants and facilities in the Far West including Utah totals approximately 2½ million tons and since estimated domestic consumption of all steel products in the seven western states for 1947 totals approximately the same 2½ million tons, it is apparent that last year one third of all steel produced in the West was exported and that the export through West Coast customs districts was similarly equivalent to approximately one third of all steel available for domestic consumers in this hungry and steel-starved western market.

For the 5 years before the war annual total export of steel commodities from the five West Coast customs districts, Los Angeles, San Francisco, San Diego, Columbia River ports of Oregon and Puget Sound and other ports of Washington averaged 49,000 tons per year. Thus the export for 1947 was approximately 15½ times prewar average.

Breaking down these staggering figures by customs districts the totals were as follows:

Los Angeles Harbor — 339,000 tons
Washington—190,000 tons
San Francisco Bay — 154,000 tons
Oregon—58,000 tons
San Diego—17,000 tons
Total—758,000 tons

Analyzing further the exports by commodities, the breakdown was as follows:

Ingots, blooms, billets, slabs—165,000 tons
Bars and rods—169,000 tons
Plate—140,000 tons
Shapes—160,000 tons
All other—124,000 tons
Total—758,000 tons

This "all other" figure includes sheet piling, rail, rail joints, and supplies, boiler tubing, casing, pipe, sheet, strip, tinplate and all wire products.

A FURTHER analysis of principal commodities by principal customs districts is of interest also;

	Los Angeles	Washington	San Francisco
Ingots, billets	115,000	49,000	.....
Bars, rods	60,000	25,000	55,000
Plates	91,000	20,000	15,000
Shapes	40,000	70,000	45,000
All others	33,000	26,000	39,000
	339,000	190,000	154,000

This export shipment of billets, ingots, blooms and slabs, semi-finished material, from West Coast ports is a new experience to the far West and the drain and diversion of this material was rather quietly and unostentatiously carried on, generally unbeknown to fabricators, industrial plants, Chambers of Commerce and other ambitious builders of the West. It is understood that most of the shipments were for France, England and Italy, and that in general a higher price tempted this substantial volume of production and produced material into unusual and emergency export channels.

For the first half of 1948 it is understood that exports from Pacific Coast customs districts have been at the rate of only 50 pct of the 1947 volume, and because of the current shipping strike which has tied up all Pacific Coast ports for the last 2 months, current exports have dwindled to the vanishing point.

Therefore, the alarm sounds too late for conservationists and promoters of home industry to view with abhorrence. Yet the impact on the thinking and mental disturbance of those whose fortunes and destinies are increasingly dependent upon generally self-supporting and roughly balanced steel production in the Far West has probably been disturbed as seriously as the normal supplies and physical stocks were in 1947.

•

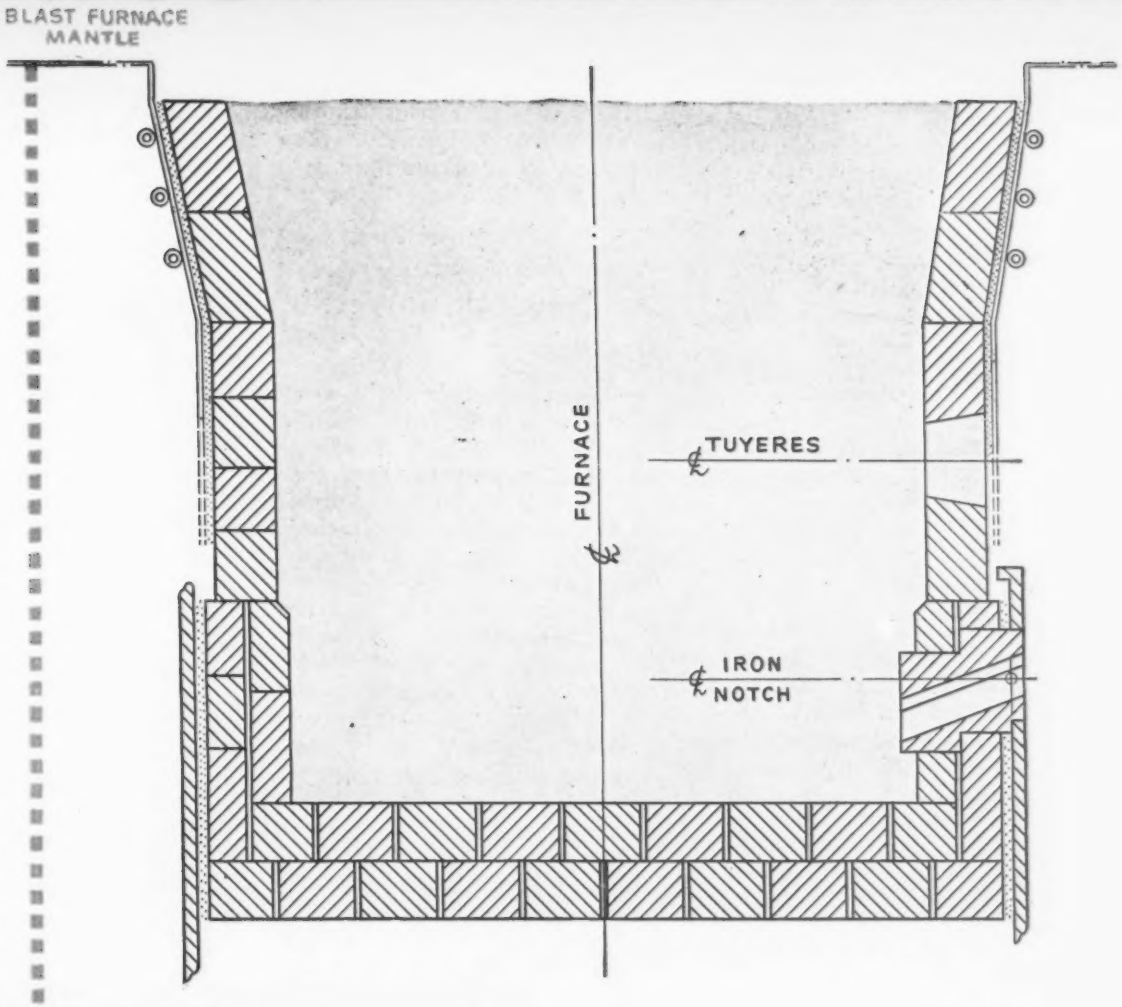
Committee Probes Effect Of Price System Change

Los Angeles

• • • **An industry-wide** study of the effect of the basing point pricing elimination in this area was urged last week by the Industrial Committee of the Southern California Council of the State Chamber of Commerce. The approved motion requested a survey of all industry and clarification of the Supreme Court decision by Congress.

H. G. Lawrence, purchasing and stores chief for the Southern Counties Gas Co. led the discussion of the basing point system of pricing steel and noted that already one source of pipe for his company had withdrawn Pacific Coast marketing to concentrate on building a market east of the Rockies.

Mr. Lawrence urged the chamber to take immediate steps to ask Congress to clarify the ruling and perhaps return to the multiple basing point system. He asked also that steps be taken to en-



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2. "National" carbon blocks are easy to install. One carbon block takes the place of from 50 to 1000 nine-inch firebrick, depending on the size of the block. This means fewer joints, sounder joints, faster installation, and lower cost.

For more information on the use of "National" carbon blocks in blast furnaces, write to National Carbon Company, Inc., Dept. 1A.

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courage greater growth in Pacific Coast steel production.

"If other producers withdraw, the next few years will be critical for West Coast industry," he said.

During the discussion, in which the opinion appeared almost unanimously opposed to the elimination of basing point pricing, gloomy forecasts included those that prices even close to the production area would gradually increase "because of a monopoly created in the section."

•

Boeing Orders Years Stock

Seattle

• • • **Aluminum stock** to the total quantity of 6¾ million lb has been ordered by Boeing Airplane Co. for its 1948 production, and since Boeing requirements roughly correspond to those of Douglas, Consolidated, Lockheed and North American in southern California, a rough approximation of the volume of aluminum raw material demand is apparent.

These 3375 tons of aluminum for Boeing break down into the following classifications: 5 million lb of sheet stock; 1¼ million lb of extrusions; ½ million lb of forgings. It is understood that principal sources for this material are the Spokane plant of Permanente Metals Corp. and the Pacific Northwest plants of Alcoa.

Several months ago Boeing officials at Wichita predicted an imminent shortage of material there, but so far there has been no indication of aluminum deficiency in the Washington area.

•

On Sound Footing

Los Angeles

• • • **Seven major** Pacific Coast airframe companies, in a quarterly report through the Aircraft Industries Assn., indicated present employment of 82,956 workers in 11 plants and backlogs for planes, parts and missiles totaling $1,449,215,138. More than 90 pct of the backlog, it was reported, is for military aircraft, and includes orders of 1977 new Air Force and Navy planes placed during the past 4 months.

The seven companies, Boeing, Consolidated Vultee, Douglas, Lockheed, North American, Northrop and Ryan, now have more than 22 million sq ft of plant area in operation on the Pacific Coast.

•

Zinc Output Up In West

Los Angeles

• • • **Zinc production** in the western states is increasing, but the country's supply is still about one-third short of demand, according to Richard A. Young, vice-president in charge of Texas operations for American Zinc Co. of Illinois.

Mr. Young recently addressed the Mining Committee and the Mining Milling Div., Southern California Section of the American Institute of Mining & Metallurgical Engineers at a joint meeting in Los Angeles.

Mr. Young stated that zinc production in the eastern states is about equal that of prewar years, but has dropped about 50 pct in the Tri-State District (Missouri, Kansas, Oklahoma) since the premium prices of the war and postwar periods were cancelled in the summer of 1947. Present domestic consumption, he said, is about 1 million tons per year, including both metal and zinc oxide, and annual imports of zinc concentrates are approximately 30,000 tons, chiefly from South America, Canada and Mexico.

•

Alcoa Spends $1 Million

Vancouver, Wash.

• • • **Installation is** under way for more than $1 million worth of improvements at Aluminum Co. of America's Vancouver aluminum plant, to trap airborne fluorides at the sources in the potrooms and, through a scrubbing and washing operation, purify the air prior to its discharge, according to C. S. Thayer, Alcoa's Vancouver works manager. Work on the project is expected to take about a year.

Improvements will consist of hoods over the aluminum pots to collect the fluorides along with a considerable volume of ventilating air, and a system of fans, ducts and washing towers to remove any fluorides present, Mr. Thayer said.

Ex-Serviceman Made A Sales Representative

San Francisco

• • • **T. Lynn Harp** has been appointed technical sales representative for the General Sales Dept. of Columbia Steel Co., a subsidiary of U. S. Steel, according to company officials.

T. L. Harp

Mr. Harp is a graduate of the University of California and was formerly a sales engineer for the Cutler-Hammer Co. He joined Columbia in 1939 as a rope engineer.

After 4 years in the service and attaining the rank of Lieutenant Commander, he returned to Columbia as a senior salesman, a position he held until his present appointment.

•

Supersonic Speeds Distant

Los Angeles

• • • **Members of** the National Aeronautic Group of the Society of Automotive Engineers, meeting in Los Angeles, heard forecasts that faster-than-sound air travel is far in the future.

K. E. Van Every, chief aerodynamicist at the El Segundo plant of Douglas Aircraft Co., termed experiments which have shown that the sonic wall can be broken as vital mainly for immediate laboratory work.

"Our problem now," he said, "is to design regulation aircraft that will fly safely and efficiently in the turbulent transonic range." (550 to 900 miles per hour.)

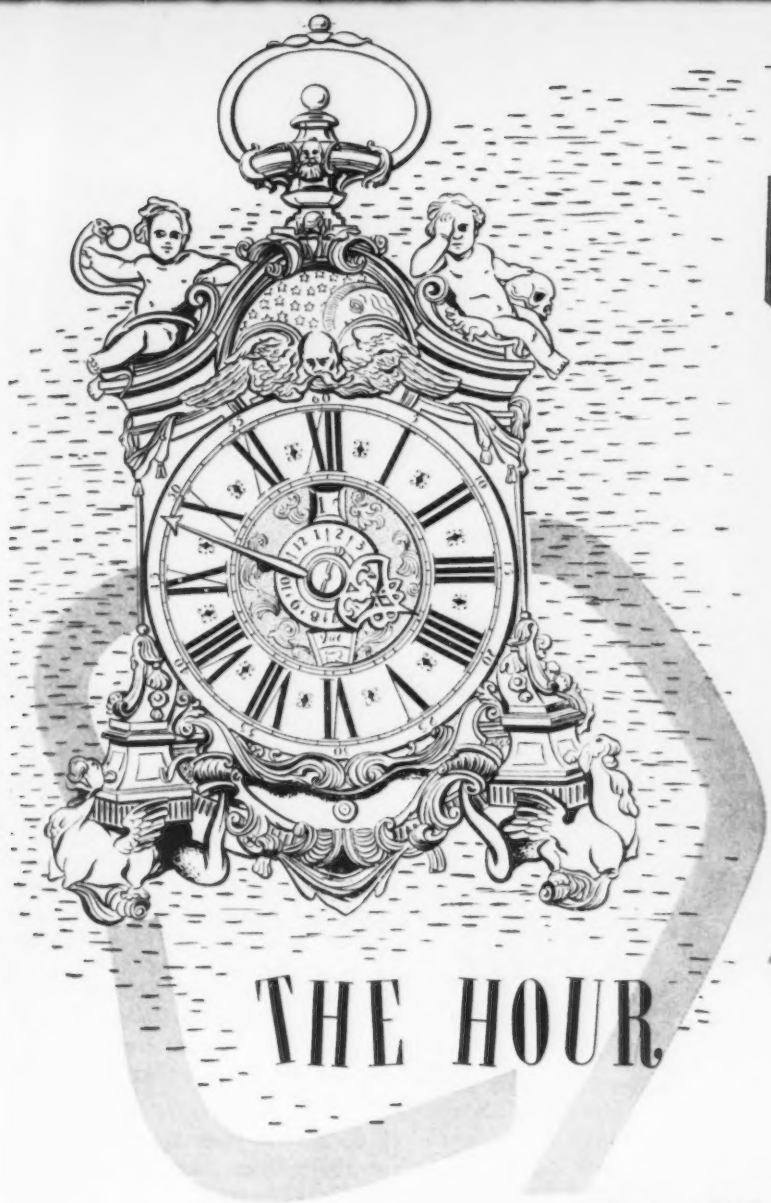
•

Wraps Off New Jet Plane

El Segundo, Calif.

• • • **The Navy** has taken the "wraps" off a new twin-jet fighter plane being manufactured by the Douglas Aircraft Co. here. The versatile new combat ship is designed for use either as an attack fighter, long-range patrol or reconnaissance plane, fighter bomber or long-range fighter escort.

Designated XF3D, the two-place craft is powered by two Westinghouse jets. It is an all-weather fighter.



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If you manufacture a metal article that sells in large quantities—or could sell that way at the right price—it will pay you to consult Clearing. Don't think your job is too big, or too precise, or too intricate. Chances are, Clearing presses are already doing something just as difficult. It costs you nothing to find out.

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PERSONALS

FRANK B. POWERS, assistant vice-president, American Car & Foundry Co.

• **Frank B. Powers** has been named assistant vice-president, Production Dept., American Car and Foundry Co., New York. Mr. Powers formerly served as vice-president in charge of engineering, Baldwin Locomotive Works and as vice-president in charge of operations of Great American Industries, Inc.

• **E. Keith Hight** has been appointed district manager in the upper New York State territory, Holo-Krome Screw Corp., Hartford. Mr. Hight had formerly been associated with Bell Aircraft Co.

• **John S. Ewing** has been appointed assistant manager, stainless steel division, Carnegie-Illinois Steel Corp., Pittsburgh. Mr. Ewing joined Carnegie-Illinois in 1936 and in 1945 came to the company's Pittsburgh office as sales engineer in the stainless steel division, and in 1946 was made product representative, which position he held at the time of his new appointment.

• **David D. Kennedy** and **Robert W. Frank** have been elected directors of Blaw-Knox Co., Pittsburgh. Mr. Frank is president of the Lewis Foundry & Machine Div. of Blaw-Knox and Mr. Kennedy is president of the Foote Co., a wholly-owned subsidiary.

• **Ernest A. Wiberg** has been named works manager of Michigan Seamless Tube Co., South Lyon, Mich.

o o o

• **E. R. Wisner** who has served as Philadelphia district sales manager of Baldwin Locomotive Works, since 1947, has been appointed assistant to the vice-president in charge of sales, Eddystone Div. **Walker H. Evans** has been appointed to succeed Mr. Wisner.

• **Frank Patnaude** has been appointed New England manager for H. J. Ruesch Machine Co., Newark, N. J. Mr. Patnaude, who will have his headquarters in Providence, R. I., had been sales manager for Standard Machinery Co., for the past 20 years.

• **Thomas L. Jenner** has been transferred to the Pratt & Whitney office in Chicago where he is associated with Machine Tool Sales. Mr. Jenner had formerly been in the main office of the company in West Hartford, Conn.

• **Loren D. Wright** has been appointed openhearth superintendent by the Symington-Gould Corp., Depew, N. Y. Mr. Wright was formerly a melter for American Steel Foundries at Granite City and Indiana Harbor.

• **Victor H. Boden** has been appointed eastern division sales manager of Carbide & Carbon Chemicals Corp., New York. Mr. Boden joined Carbide & Carbon in 1933 and in 1940 was named district sales manager in Philadelphia in which position he served until his new appointment. For the present Mr. Boden is located in the Corporation's Philadelphia office.

• **R. B. Algie** has been appointed assistant manager of sales, wire products, Jones & Laughlin Steel Corp., Pittsburgh.

• **William L. Sayre** of Daytona Beach has been appointed Florida representative for the Sterling Mfg. Co., Cleveland. Mr. Sayre was formerly associated with General Electric Co. and Crosley Radio Corp.

• **O. T. Henkle, Jr.**, has been named sales manager of the Mercury Mfg. Co., Chicago. **P. K. McCullough** has been named assistant sales manager.

R. N. CAMPBELL, vice-president, Landers, Frary & Clark.

• **R. N. Campbell** has been appointed vice-president in charge of manufacturing operations, Landers, Frary & Clark, New Britain, Conn., succeeding **L. A. Brown**, who resigned recently. Mr. Campbell had been associated for many years with the Carrier Corp. and more recently with Timken Detroit Axle Co. **Charles Cook** has been named manager of the main plant of the company and assistant to Mr. Campbell. Mr. Cook joined Landers, Frary & Clark 38 years ago as a machine operator and advanced steadily in the company's employ.

• **G. Mayne Daly** has been named southern sales manager of the pole line hardware division of Oliver Iron & Steel Corp., Pittsburgh. Mr. Daly formerly served as northeastern district manager in New York. In his new capacity he has charge of Oliver warehousing facilities in Birmingham and eight states in the southeastern section.

• **H. P. Gangwer**, comptroller, has been named vice-president and **D. A. Hutchison** general sales manager of Sterling Tool Products Co., Chicago. Mr. Hutchison, who formerly served as assistant sales manager, succeeds **J. A. Proven** who has resigned.

• **Reg Anderson** has been appointed sales engineer in New York State and New England for Threadwell Tap & Die Co., Greenfield, Mass. Mr. Anderson has spent 16 years with Threadwell in production, inspection and sales work. For several years he was chief inspector.

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GLOBE

STEEL TUBES

C. E. TWEEDLE, vice-president, Askania Regulator Co.

• **C. E. Tweedle,** assistant to the president of Askania Regulator Co., Chicago, has been elected vice-president of the company. Mr. Tweedle became associated with Askania in 1946.

• **Arthur B. Van Buskirk,** vice-president and member of the board of governors of T. Mellon & Sons, has been elected to the board of directors of Koppers Co., Inc., Pittsburgh, succeeding **Donald D. Shepard** who has resigned.

• **L. G. DeMotte** has been named southeastern district sales manager for Willard Storage Battery Co., Atlanta, succeeding the late **R. B. Hutchison.** Mr. DeMotte joined Willard in 1931 as office manager in the Indianapolis district office. Prior to his new appointment he was assistant sales manager at the company's main office in Cleveland.

• **Don M. Tatem** has been appointed manager of the Kansas City district of the B. F. Goodrich Co., Akron, Ohio, succeeding **W. A. Olson,** who has entered his own business. Mr. Tatem had formerly been manager of the Birmingham district since its creation three and one-half years ago. **Charles S. Millikin** has been named manager of the Birmingham district succeeding Mr. Tatem. Mr. Millikin joined the company in 1936. He has been general supervisor in the Washington district since 1947.

• **John C. Ingram** became manager of the material department of the Canonsburg plant of Fort Pitt Bridge Works, Pittsburgh, succeeding **Fred R. Wilson** who has retired after 49 years with the company.

• **Charles P. Haskell** has been appointed special engineering representative for Nelson Stud Welding Div., Morton-Gregory Corp., Lorain, Ohio, at Wright Field, in charge of sales to the Department of the Air Force.

• **Harry Conn** has been named chief engineer, Scully-Jones & Co., Chicago. Mr. Conn had formerly been associated with International Harvester Co., La Salle Engineering Co. and Gridley Farm Tool Co., Inc.

• **Charles C. Whittelsey** has been elected vice-president in charge of construction activities, Ford, Bacon & Davis, New York. He has been with the firm since 1925 and has been a director since 1946. Mr. Whittelsey has also been elected executive vice-president of the firm's subsidiary, Ford, Bacon & Davis Construction Corp., with headquarters at Monroe, La., he having been an officer and director of this company for several years.

• **E. J. Campbell,** has been promoted to assistant manager of mid-western sales, Wolverine Tube division (Detroit), Calumet and Hecla Consolidated Copper Co., Inc., with his headquarters in the company's Chicago office. **S. C. Seekell,** formerly sales manager for Westinghouse Electric Supply Co., has been appointed to succeed Mr. Campbell as sales representative. Mr. Seekell has his headquarters in Grand Rapids and handles Wolverine sales in western and southwestern Michigan.

• **I. F. Pohlmeyer,** has been appointed to represent the Agaloy Tubing Co., of Springfield, Ohio, in Southern California. Mr. Pohlmeyer has his headquarters in Beverly Hills, Los Angeles.

• **James G. McKillen, Jr.,** has been appointed sales representative for Eastern Stainless Steel Corp., Baltimore, with his headquarters in Cleveland. Mr. McKillen had formerly been associated with Armco Steel Corp.

HARVEY N. BARRETT, JR., assistant manager of sales, Basic Refractories, Inc.

• **Harvey N. Barrett, Jr.** has been named assistant manager of sales, Basic Refractories, Inc., Cleveland. Mr. Barrett has been associated with the company for the past nine years in various sales and product development assignments. Most recently he has been assistant to the vice-president in charge of sales.

• **Porter S. Kier** has been elected secretary of American Cladmetals Co., Carnegie, Pa. Since 1946, Mr. Kier has acted in the capacity of public accountant for the company and in 1947 became assistant secretary, assistant treasurer and a director. Recently he resigned as treasurer and a director of Columbia Radiator Co. in order to devote full time to the affairs of American Cladmetals Co.

• **Timothy E. Shea,** assistant engineer of manufacture of the Western Electric Co., New York, has been elected president and a director of the Teletype Corp., a subsidiary of Western Electric, succeeding **Clem H. Franks,** who died.

• **Robert M. Conley** has been named superintendent of the Pittsburgh Plate Glass Co.'s plate glass producing plant at Crystal City, Mo., succeeding **George W. Oakes,** who has resigned to manage his personal business interests. **B. H. Greenop,** associated with the plate glass manufacturing department in Pittsburgh since 1930, has been appointed assistant superintendent.

• Huntly **M. Campbell** has been appointed sales manager of the mill products division of Western Brass Mills, division of Olin Industries, Inc., East Alton, Ill. Mr. Campbell joined Western Brass Mills in 1940 and in 1941 became district manager for the company with headquarters in Milwaukee.

• **Gordon A. Weller** has been appointed assistant manager of replacement sales and **Frank A. Colosimo** has been appointed chief service engineer for American Brakeblok Div., American Brake Shoe Co., New York. Mr. Weller, formerly sales representative, has served in various sales capacities with the company. Mr. Colosimo has been in development and research work with the company since joining American Brake Shoe in 1934. Both men have their headquarters in Detroit.

• **Monroe A. Toussaint** has been appointed Conlon division assistant to the president of the Conlon-Moore Corp., Chicago. Mr. Toussaint was formerly general manager of the American Ironing Machine Div., Barlow & Seelig Mfg. Co., Ripon, Wis.

• **Ronald B. Smith** has joined the M. W. Kellogg Co., New York. An engineering expert of long and varied experience, Mr. Smith is a consultant to the Atomic Energy Commission and a member of the National Advisory Committee for Aeronautics.

• **A. F. Vinson,** formerly assistant production manager, apparatus department, General Electric Co., Schenectady, and chairman of the G-E welding committee, has been appointed manager of the welding divisions. **Vernon L. Cox** has been named manager of engineering for the switchgear divisions, succeeding **C. H. Black,** who has been appointed manager of engineering of G-E's construction materials divisions. **Ralph C. Dean** has been named manager of construction materials sales in the company's north central district, Chicago. **W. Rex Becker** has been appointed sales manager of standard lines for the conduit products division in Bridgeport, Conn., succeeding Mr. Dean. **Roger F. Hinckley** has been named to succeed Mr. Becker as product promotion manager of the wiring device division.

• **Dawson J. Burns** of the Ward Leonard Electric Co., Mount Vernon, N. Y., who resigned as president of the company, has been elected chairman of the executive committee. Mr. Burns has been a member of the board of directors since 1903 serving the company as vice-president from 1908 to 1944 at which time he was elected president. **Arthur A. Berard,** executive vice-president and general manager of the company since 1944 has been elected president and general manager. Mr. Berard, who joined the company in 1920, has been a member of the board of directors since 1927 and has served as factory manager and general sales manager.

LEWIS W. METZGER, executive vice-president, Midvale Co.

• **Lewis W. Metzger** has been elected executive vice-president of the Midvale Co., Philadelphia. Mr. Metzger retains his former position as vice-president of the Baldwin Locomotive Works and executive assistant to the executive vice-president of Baldwin.

• **Franklin L. Klocke** has been appointed factory representative of the Hewitt Rubber division in North Carolina and Virginia and the Hewitt Restfoam division in the southeast, for Hewitt-Robins, Inc., Buffalo. Mr. Klocke has his headquarters in the Charlotte-High Point, N. C., area.

OBITUARY...

• **Lauson Stone,** 65, president and chairman of the board, Follansbee Steel Corp., Pittsburgh, died Oct. 8.

• **William M. Olsen,** western district sales manager, Chicago Div., the Lamson & Sessions Co., Cleveland, died Oct. 5.

• **Arthur H. Wyman,** 65, manager of Allis-Chalmers general machinery district sales office at Cleveland, died Oct. 5.

• **Mathew R. Rosse,** 50, export manager, Colorado Fuel & Iron Corp., New York, died Oct. 7.

• **Arthur A. Nelson,** retired assistant general sales manager of Keystone Steel & Wire Co., Peoria, Ill., died Oct. 4.

• **Grant B. Sturgis,** manager of parts and warehousing distribution, Truck & Coach Div., General Motors Corp., Detroit, died Oct. 4.

• **Dr. William R. Work,** 67, assistant director of the College of Engineering and Science, Carnegie Institute of Technology, Pittsburgh, died Oct. 3.

• **Julian L. Mason, Sr.,** 67, electrical engineer, McWane Cast Iron Pipe Co., Birmingham, died recently.

• **George A. Blackmore,** 64, chairman of the boards of Westinghouse Air Brake Co. and Union Switch & Signal Co. Pittsburgh, died Oct. 2.

• **Thomas F. Maher,** 82, president, Jamestown Iron Works Co., Jamestown, N. Y., died Oct. 1.

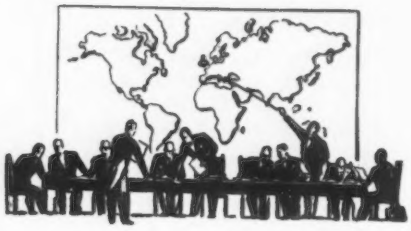
• **Augustine L. Kelly,** retired owner of Kelly Forging Co., Watervliet, N. Y., died Sept. 26.

• **Daniel E. Miller,** 59, director of purchases, Carborundum Co., Niagara Falls, N. Y., died recently.

• **James T. Neal,** 61, assistant secretary-treasurer, National Supply Co., Pittsburgh, died Sept. 23.

European Letter . . .

• Cominform founded solely as safeguard to security of Soviet Union . . . Aimed to weaken and divide, it achieves exactly opposite effect . . . Russia's enemies now aroused, united and arming against her.



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LONDON—To single out one year of Soviet Russia's relations with its satellite states and Communist parties is misleading, for it may suggest that the year is in some way different from all preceding years and that Soviet policy during that period underwent some striking change. It is that the defense of the Soviet Union by the exact methods laid down by the Soviet Union is the sole *raison d'être* of a Communist government party or individual member. As Dimitrov, the prewar head of the Comintern, put it in defending the Nazi-Soviet Pact of 1939:

The historical dividing line between the forces of fascism, war and capitalism on the one hand and the forces of peace, democracy and socialism on the other hand is in fact becoming . . . not the formal attitude towards Soviet power and socialism in general, but the attitude to the Soviet Union which has been carrying on a real existence for the last twenty years.

The foundation of the Cominform in October, 1947, should not, therefore, be thought to denote any profound change in Soviet foreign policy; but it did mark a definite change in tactics. From 1945 to 1947, the Russians pursued what might almost be called a leisurely policy in Europe. It is true that they secured Communist predominance in the states occupied by the Red Army and had suceeded in suppressing the remnants of German Social Democracy in their own zone before Easter, 1946. But in general they permitted bourgeois elements to survive in the various governments of eastern Europe; and though the Communist members of western coalition governments were troublesome, they were not entirely obstructive. It may be that this relatively mild phase was due to a belief in and a desire for cooperation with the western world. It is equally likely that the slice of Europe bitten off by the Communists needed some mastication before it could be swallowed.

WHATEVER the explanation, the year 1947 brought this period to an end. Even at its leisurely pace, Russia had swallowed enough of Europe to perturb the western world, and in Germany and Greece the pace was becoming anything but leisurely. Another factor was economic. The plight of western Europe seemed to make the spread of Communism inevitable, and the strongest member of the western world, the United States, awoke to the dangers of letting Europe drift under Soviet domination. The Truman Doctrine (March, 1947) was limited and confined itself to an area, Greece and Turkey, in which Russian pressure had already become definitely threatening. But the second move —the offer of Marshall aid in June, 1947—affected the whole of Europe.

It may well be that this acceptance on the part of the Czech and Polish Governments was the decisive factor in determining the Russian leaders to establish the Cominform. In October, members of eight of the Communist parties of Europe were summoned to Warsaw to confer with the parent Russian party, and there the late General Zhdanov, at that time a secretary of the party and an ex-member of the Comintern, outlined to them the new historical situation, called on them to set up a new Communist Information Bureau—the Cominform—and laid down for them the methods whereby the interests of the Soviet Union must be defended.

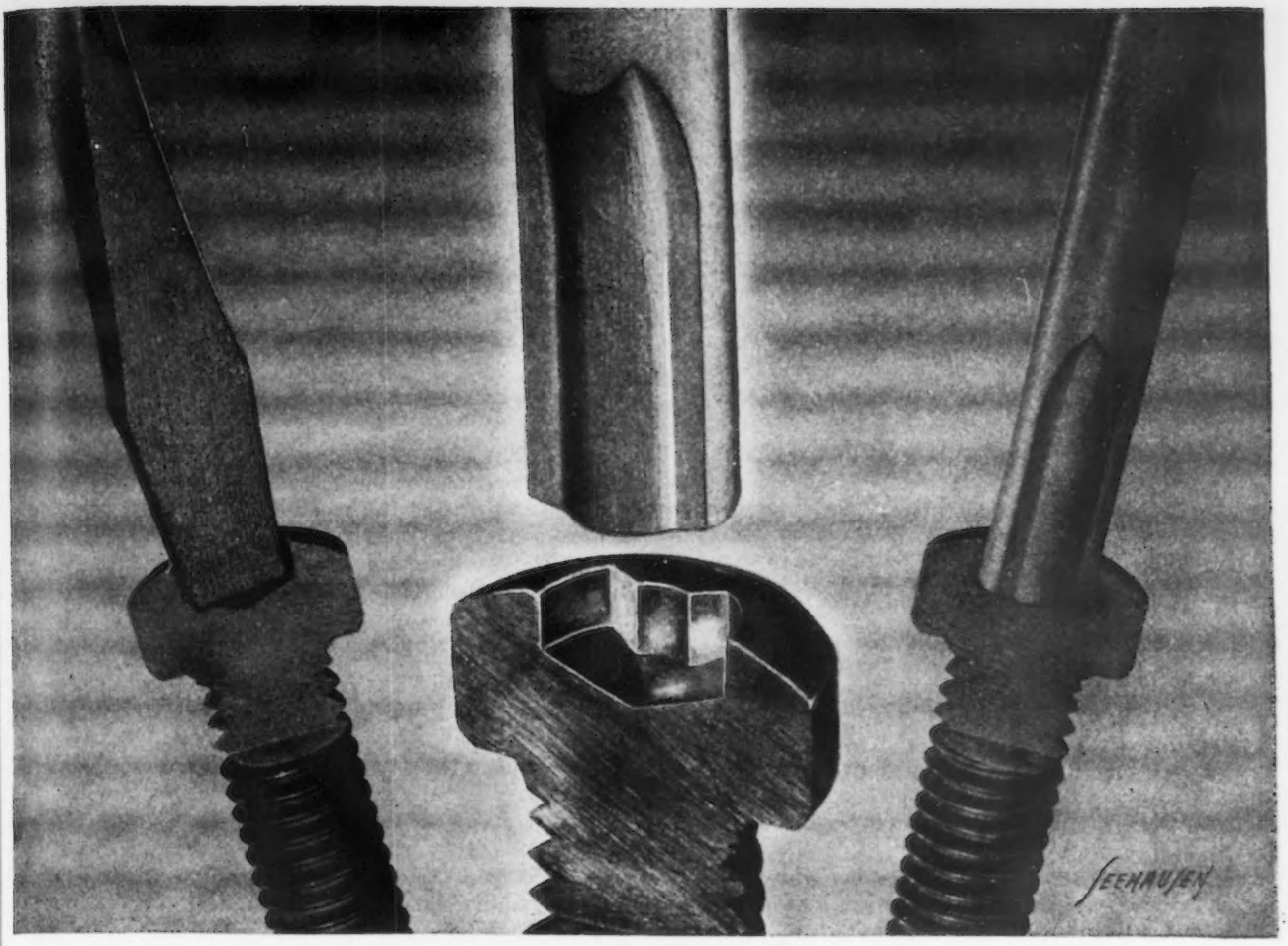
Zhdanov echoed Dimitrov in defining the essence of the new situation. The world was once again divided into "two camps"—

the imperialist, anti-democratic camp, the principal aim of which is to establish the world domination of American imperialism and to defeat democracy; and the anti-imperialist and democratic camp, the principal aim of which is to undermine imperialism, strengthen democracy and liquidate the remnants of fascism.

General Zhdanov was perfectly explicit on the means whereby the "western threat" was to be countered. First the Marshall Plan would be defeated in the West. This part of the strategy fell principally to the lot of the French and Italian Communist parties. They were censured for leaving the coalition governments in France and Italy, since they could have wrecked the Marshall Plan more easily in office than out of it. They must now either attempt to recover political power or by strikes, unrest and local violence to undermine the economic bases of the Plan. These were the marching orders of the western parties.

The second aim of the new strategy was to "close the ranks" in eastern Europe. The two years of cooperation with the bourgeois and social democratic elements in each eastern country had left some non-Communists in positions of authority, and had also inflated the Communist Party itself with new recruits of doubtful ideological purity.

(CONTINUED ON PAGE 131)



Here's How CLUTCH HEAD *Brings New Safety, New Speed in Line Assembly*

Q. What is the main cause of driver skidding? **A.** *"Ride-out" as set up by tapered driving.*

Q. How does CLUTCH HEAD overcome this "ride-out"? **A.** *By elimination of the tapered recess.*

Q. How does the CLUTCH HEAD engagement differ? **A.** *With straight sides of driver matching straight recess walls.*

Q. What safety benefit results from this engagement? **A.** *No slippage, so no damage to operators or work.*

Q. Does this eliminate need for end pressure? **A.** *Yes. No "ride-out" to combat; no end pressure; no skids.*

Q. Do CLUTCH HEAD users support this skid-free claim? **A.** *Many. Norge says "Cabinet damage eliminated."*

Q. What of this feature as a fatigue factor? **A.** *Effortless driving means more screws driven per day.*

Q. How does the Center Pivot Column add to safer driving? **A.** *It prevents canting by guiding bit into dead-center entry.*

Q. Why is CLUTCH HEAD "America's Most Modern Screw"? **A.** *Because it has features unmatched by any other screw.*

Q. What are these features?

A. *They include a recess engagement to match the ruggedness of the Type "A" Bit construction for driving up to 214,000 screws . . . non-stop; simple 60-second bit reconditioning; the Lock-On for easy one-handed driving, and basic design for common screwdriver operation.*

CLUTCH HEAD SCREWS

Q. And how may we check them?

A. *You may check all of these features by sending for package assortment of screws, sample Type "A" Bit, and illustrated Brochure. These will come to you by mail and will give you an understanding why CLUTCH HEAD users report 15% to 50% increases in assembly production.*

UNITED SCREW AND BOLT CORPORATION

CLEVELAND 2 CHICAGO 8 NEW YORK 7

Industrial News Summary...

- **Conversion Steel Ups Total Shipments**
- **Auto People Lead in Use of This Method**
- **German Scrap Coming But Flow Is Slow**

AUTOMOBILE people got up off their seats and did something spectacular about the steel shortage this year. They bought ingots and semifinished steel and had it made into sheets and strip. They did this so they could make cars and trucks that might not have been made if they had stood still and done nothing.

They paid collectively about $135 million over and above the regular mill prices to get this "extra" steel. But the effort was worth it. When final figures are in, more than 1,050,000 cars will have come off the assembly line than would have otherwise been possible.

Not only that. Jalopy owners will be happy to know that, because of converting raw steel from one plant to finished steel in another, more than 300,000 tons of spare parts have been made available this year. Thousands of cars would not run without these parts.

Those who know, claim that the use of steel conversion makes auto people directly responsible for more than 7 pct of all sheet and strip being made this year, or 2 pct of all finished steel to be shipped.

These figures are not guesses. They have been obtained, checked, compiled and rechecked by THE IRON AGE. Most informed people who have checked these startling results have said that the figures were conservative.

These so-called conversion deals should not be confused with gray market deals. They are not. The ingots or slabs are bought in the open market by auto officials. Through cooperation with regular or other steel mill sources, they are processed into finished steel that auto men can use.

IT costs a lot of money to do this. Roughly it costs about $100 a ton more than the regular price of steel. But without this kind of a three ring circus autos for the public would be tighter than they are now and repairs and replacements in many cases would be impossible.

The oil and gas industry also has increased the amount of steel by conversion projects. Their steel buyers have the merry-go-round jitters too. But they have produced hundreds of thousands of tons of steel this year that would not have been available had they not followed the same technique as auto people. Results are a little more difficult to tack down. But it is a safe bet that close to ½ million tons of steel for pipe lines and other oil and gas uses came from conversion plans. And more is coming that way.

THE IRON AGE estimates that close to 2½ million tons of steel ingots have been channeled into the conversion race this year. This means that close to 1,750,000 tons of finished steel will have been made available this year by the effort of steel industry customers. And it also means that the steel firms which are converting the steel have as a dividend the scrap which results from breaking the ingots down into finished steel. The converter usually gets this valuable material.

FORTUNATELY for customers, steel firms often have more finishing capacity than steelmaking capacity. That's why they can convert. But they look the conversion orders over good before they take them. They are afraid of gray market implications.

Conversion deals involve as far as possible only regular customers. These things are checked. The steel must be of known good quality. Sources which have quality difficulties are thumbs down.

In their effort to be quiet about conversion deals steel people often do not realize that here is a gimmick which means more of everything for everyone. It is the one thing that shows extra enterprise. It means more steel for the customer, more use of idle capacity, more scrap for the converting mill and more end products for the consumer.

Steel demand is strong—so strong that no one sees any weakening in the steel market yet. There are murmurs that finished or manufactured products are not moving so fast. An attempt to nail this down to specific companies and products leads nowhere.

The steel ingot rate this week approaches an all-time high from a tonnage standpoint. The rate is up half a point to 99 pct of capacity. This means that more scrap is available, repair programs are in good shape and all bad effects of the coal strike are overcome—until the next stoppage.

German scrap is coming to the United States—but not fast enough. The mere mention of it has had some effect on prices here. Big amounts will eventually reach this country. But of the 435,000 tons already contracted for on old orders only 100,000 tons have reached mills here. The balance is either in transit (60,000 tons) or it is snarled in international red tape—or boiling in steel furnaces in some other country.

Remote areas out of Chicago report gray market activity increasing. These are areas in which the f.o.b. mill move means something as far as increased freight charges are concerned. These people are outside the eastern official territory so that the freight rate takes a good jump after it crosses the Mississippi River.

• **ALLOY PRICES SOAR**—Carnegie-Illinois Steel Corp. on Oct. 15 announced new grade extras on all types of alloy bars, blooms and billets. The size extra on alloy bar flats was revised upward also. The following increases were made on bars: Lower alloy 1300 series only went up $3 a ton, however, grades like 2300, 3100 and 9800 went up $7. The electric furnace 2500 and 3300 series top the list. These grades were increased $10 a ton. Bearing steels like 52100 were increased by $2 a ton. Other grades were up either $4, $5 or $6. Carnegie blamed the increased ferroalloy cost for the new price hike. Since last year they said high carbon FeMn is up 8.2 pct, medium carbon FeMn up 10 pct, and low carbon FeMn is up 7.6 pct. The average increase in all carbon types of FeCr has been 15.8 pct, the company declared. The 50 pct grade of FeSi has increased by 19.3 pct since last year and 90 pct FeSi has gone up 9.7 pct. According to Carnegie's figures nickel has increased 18.3 pct since their last price card on alloy bars was published.

• **WELL STACKED**—Carnegie-Illinois has a contract for 120,000 tons of German scrap to be obtained through the Scrap Iron & Steel Import Corp. They have since obtained options on an additional 80,000 tons. Their first boat load on the steamship Louis Pasteur was well stacked. They packed in 9438 tons of scrap on a Liberty Ship—a remarkable job of loading. Carnegie now expects their German scrap to flow into this country at the rate of about 40,000 tons a month until the contract is fulfilled. German scrap will go to the Pittsburgh district and domestic scrap earmarked for the Pittsburgh mills will be diverted to the Chicago area to effect material savings in freight rates.

• **MAKES O TWO**—The first plant designed and constructed in this country for the production of low purity oxygen for use in blast furnaces has commenced operation at the Johnstown Works of Bethlehem Steel Co. The equipment was designed by Air Reduction Co., Inc., and its installation was handled by Koppers Co., Inc. The output of the plant will be taken by Bethlehem Steel Co. for experimentation in the use of oxygen for the enrichment of the air blast in blast furnaces. When, as a result of this research, significant data have been accumulated they will be made available to the steel industry.

• **ELECTRICAL SHEET PRICE BOOST**—Allegheny-Ludlum Steel Corp. notified silicon sheet customers that effective Oct. 11 hot-rolled motor and dynamo grade silicon sheets had been raised $50 a ton. Transformer grades 72, 65, and 58 were also boosted by $75 a ton.

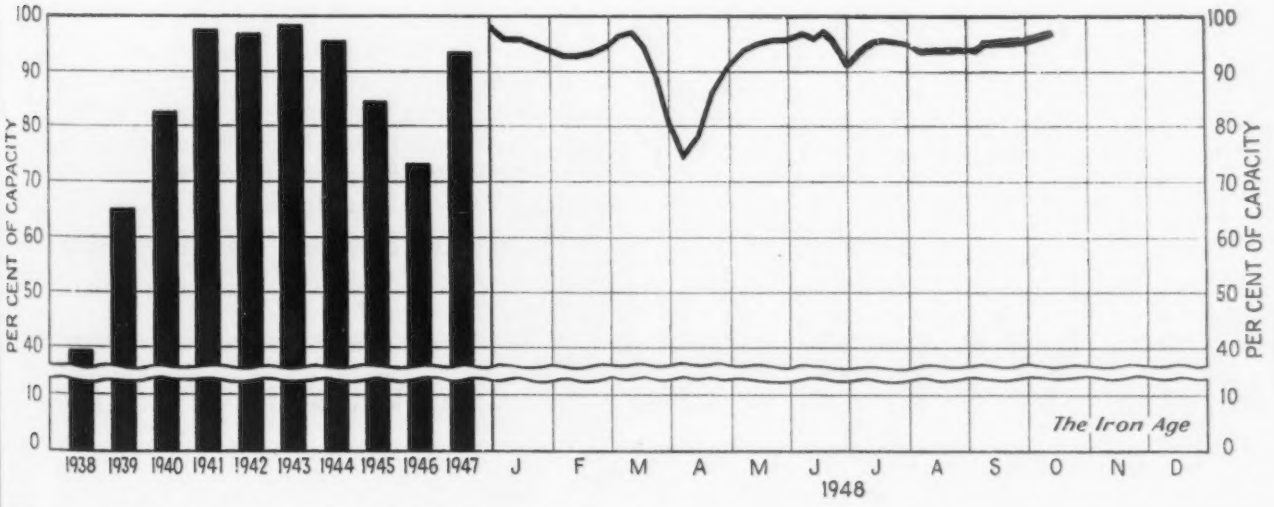
• **SO IT'S KNOWN**—Because of conflicting published reports regarding adjustment of price extras on a small part of its output, which was made effective Oct. 1 to correct old manufacturing costs, Great Lakes Steel Corp. issued this statement: "There has been no change in the base price of any Great Lakes Steel Corp. product and no change in the price extras on any product except for approximately 20 pct of the company's output which is hot-rolled sheets and strip. There has been no price increase applying to cold-rolled or alloy steels, which make up approximately 80 pct of the company's steel output." Signed, Great Lakes Steel Corp. [There was no confusion in THE IRON AGE report of the increases—Editor.]

• **NEGOTIATING**—An official of Copperweld Steel Co., has denied published reports that the Warren, Ohio, plant had been sold to Borg Warner. It was admitted that negotiations were still proceeding on the proposed sale of the plant. One of its most valuable assets is seven electric furnaces capable of producing approximately 590,000 tons of carbon steel ingots annually. The company's main plant at Glassport, Pa., is not involved.

• **YEP, MORE SHEETS**—They're going to make more silicon sheet at Carnegie-Illinois' Vandergrift plant. Two new continuous coil annealing lines have just gone into operation. Recently installed electrical sheet equipment includes a 54-in. cold reduction mill, a temper pass mill, a gas fired continuous annealing furnace and auxiliary equipment.

• **TAKES JUST SO MUCH**—Canada agreed this week to limit its imports of iron and steel from the United States to 200,000 tons during the fourth quarter of 1948. This is a reduction of 22 pct from the average quarterly level in 1947 and 18 pct from average quarterly level of the first half of 1948. Following are tonnages of specific products agreed on: Structural, 35,000 tons; plates, 17,000 tons; galvanized sheets, 2500 tons; pipe, tubing and skelp, 30,000 tons, and wire, 8000 tons.

Steel Ingot Production by Districts and Per Cent of Capacity



Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	West	Ohio River	St. Louis	East	Aggregate
Oct. 12	99.0*	99.0*	94.0*	90.0	100.0	105.0	96.5	102.0	103.5*	95.5	110.0	91.5	112.0	98.5
Oct. 19	99.0	98.5	94.0	90.0	100.0	105.0	96.5	103.0	102.0	96.0	110.0	89.5	91.0	99.0

* Revised.

SERVING YOU by doing things with air

PROSPERITY is the target of this gun

A DeVilbiss spray gun in the hands of any operator *makes money wherever it is used.* This is true because its unsurpassed efficiency and speed permit manufacturers to produce more products faster at lower cost.

DeVilbiss spray systems effect time, labor and material savings that will put your finishing department on a profitable basis . . . regardless of the type, shape or size of the products you're painting.

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DE VILBISS

means **Quality** *in all four . .*

SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS

German Scrap Deliveries Into U. S. Lag Far Behind Expectations

Situation In Direct Contrast To Continuous Flow Into Britain From Bizone

o o o

By STEVE SMOKE
Associate Editor

o o o

New York

• • • **We should have** a lot of German scrap in this country—but we don't. From all the scrap deals you hear about, you would imagine there were some 2 million tons here already and that the bottom were going to drop out of the domestic market next week. But the real story is far different.

Properly expedited, we might have had close to 500,000 tons by now. But truth of the matter is that we've gotten only about 100,000 of the 435,000 tons contracted for by various purchasing corporations prior to current allocations. The balance is either in transit (about 60,000 tons), snarled in red tape or boiling in British steelmaking furnaces.

The United Kingdom has done well. With the war's end she snagged almost 1 million tons of semifinished products from German warehouses and hied them off as war booty. Then she followed up by whisking off some 800,000 tons of scrap; some paid for, some booty and some bartered.

Meanwhile our Canterbury scrap is still coming—in dribbles.

We have a critical scrap shortage. American mills buy about 23 million tons of scrap a year. If we don't start getting the scrap that we have already contracted for and the scrap that has been allocated to us any faster than we have in the past—we'll be in the soup.

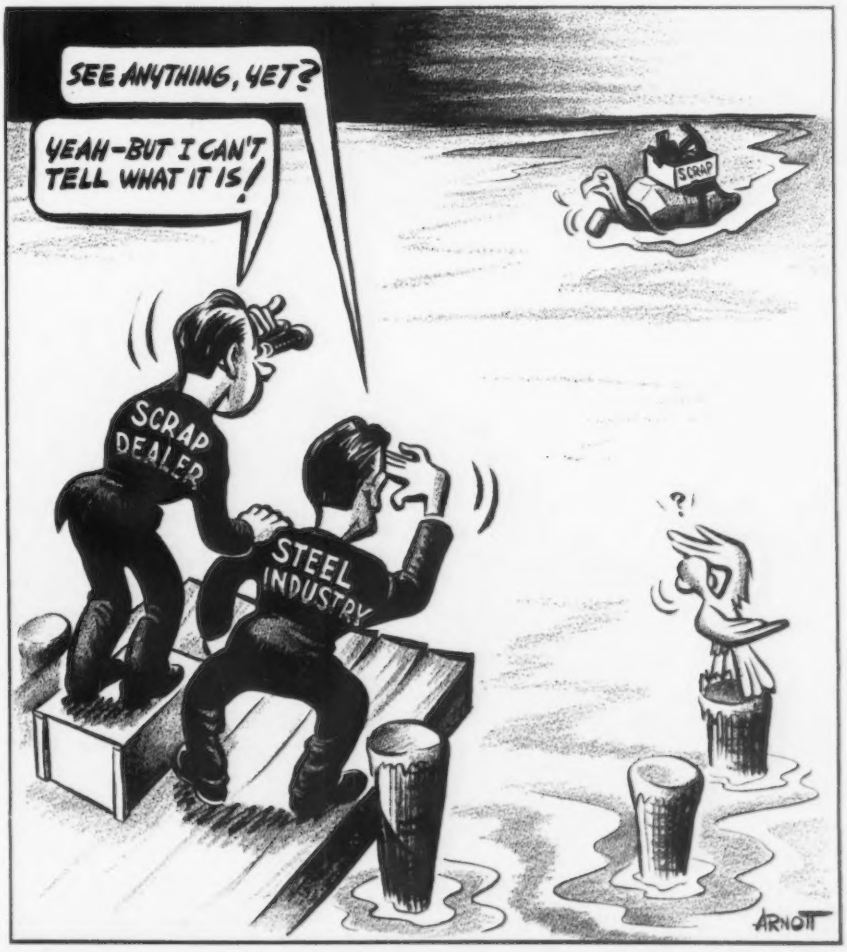
That's why Secretary of Commerce Sawyer is working like a beaver trying to get some expediting schemes into operation as fast as possible and that's why a private corporation which would serve as a single purchasing agency in Germany is in the process of formation. This corporation would be similar to the single agency operating for Britain in Germany—and doing right well.

Despite our general slowness in actually getting scrap over here—there are encouraging signs pointing to the future. Bethlehem Steel Co. contracted for 50,000 tons of German scrap through the Great Lakes Carbon Corp. It's all here now and it got here in no time flat. They are now working on another 150,000 tons with Great Lakes and Western Steel Corp. which will be worked in some way with the current United States allocation.

Carnegie-Illinois has contracted for 120,000 tons and obtained options on an additional 80,000 tons through the Scrap Iron & Steel Import Corp. It took them about 6 months to get started but they expect the 120,000 tons to be here by December and if the loading on the first boat (almost 10,000 tons on a Liberty ship) is any indication, a little extra effort on the other side will do it.

If Carnegie gets its scrap as planned and if the Richard Nathan Corp. can deliver before December, we will still have only about 200,000 tons of scrap from Germany before the winter; hardly enough to break a market and a

Slow But Sure!



cold fact to be staring you in the face with winter coming up.

The future gives us another chance. Britain and the United States have agreed on how to divvy up what comes out of Germany from here on. Both have cut into the deck for 375,000 tons while other countries, principally Sweden, Belgium and Italy, have pulled off 100,000 amongst them. That's 850,000 tons—get as get can.

In addition to this, the three groups, Britain, the United States and the other countries, will receive another 125,000 tons to be charged against future allocations. It is hoped that by Oct. 1, 1949, the flow of scrap from Germany will have been 1 million tons over and above the 850,000 tons already provided for in the agreement.

Price of scrap purchases has been set at $28.50 per ton f.a.s. German ports. This compares with a price of $26 per ton for which most of the previous scrap was bought.

In Germany the Joint Export Import Agency (JEIA) handles all transactions between the dealers and the purchasing agencies. German workers unload the rail cars at the ports and load either in to barges for transportation to the seacoast or directly into ships at seaboard ports. But the purchasing agency pays JEIA in American dollars and JEIA in turn pays off in German currency.

Much of the material now coming over from Germany consists of wreckage from industrial plants, railway installations, abandoned ships, girders, etc. It is good industrial scrap already cut to charging box size.

Plans are now in the making for various control authorities to supervise every phase of exporting German scrap.

First, it is proposed that the military governors of the United States and Britain set up an authority to supervise and control the collection and export of all scrap.

Then, a committee of the 16 Marshall plan nations in Europe and the United States would recommend the distribution of scrap exports among the various countries.

Finally, the single purchasing corporation proposed in the United States would determine the distribution of the American allotment among the various steel producers in this country.

Whatever the final outcome of all the planning may be, one thing remains certain. There is scrap in Germany. Whether it may eventually be 5 million or 10 million tons is immaterial right now. We've got to do a lot better job in getting it over here. We've only gotten 100,000 tons so far. The most we could have by Christmas is 200,000 tons. And that isn't even a drop in the bucket to American industry when it comes to meeting the present-day demands for steel products.

Read and Weep

• • • Following are the tonnages of German scrap which were contracted for prior to current allocation agreements between Britain and the United States.

Also listed are the purchasing agencies and the approximate tonnages of the original contracts which have already arrived in this country.

Agency (Corp.)	Tonnage contracted	Tons received
Canterbury ..	147,000	30,000
Scrap Iron and Steel Import	120,000	10,000
V. Purdy	75,000	None
Great Lakes Carbon	50,000	50,000
Richard Nathan	43,000	10,000
Totals	435,000	100,000

AGREEMENT ON FERROUS SCRAP

I. *Proposal to CEEC Countries on Allocation Machinery*

A proposal will be put before the members of the Organization of European Economic Cooperation that an ad hoc Committee be established in Paris consisting of representatives of CEEC members and the United States as a full member. It is proposed that this committee, although outside the jurisdiction of the CEEC council, should work in close cooperation with it and its committees. The functions of the committee shall be to make recommendations to the governments of the countries participating in the CEEC, including the Bizonal Area of Germany and the French Zone, on the distribution of scrap exports from those countries. Final decisions with respect to exports will be made, however, by the governments of the exporting countries. In the Bizonal area decisions will be made by the US and UK Military Governors subject to the provisions of Article III of this agreement.

II. *Instructions to Military Governors*

Identical instructions shall be sent to the US and UK Military Governors in Germany as follows:

(1) It is the desire of the governments of the United States and the United Kingdom that the total collection and export of scrap from the Bizonal Area, after providing for the legitimate requirements of the German steel industry, be maximized.

Initial Authorizations Outside of Future Allocations

(2) The existing authorization (approved May 13, 1948) of 600,000 tons (namely 200,000 tons to the United States, 300,000 tons to the United Kingdom, and 100,000 tons to other countries) is confirmed.

(3) In addition there shall be the following supplementary authorizations:

(a) 100,000 tons to the United States, to bring the United States share to parity with the above-mentioned United Kingdom share of 300,000 tons;

(b) 75,000 tons to the United Kingdom as a final shipment of booty scrap without payment;

(c) 75,000 tons to the United States, to correspond to (b) above, but not free of payment.

(4) The above total authorizations of 375,000 tons to the United States, 375,000 tons to the United Kingdom, and 100,000 tons to other countries shall not be charged to future allocations, and the two Military Governors shall implement these authorizations immediately.

Export Availabilities from the Bizonal Area

(5) The US and UK Military Governors shall inform the ad hoc Committee, promptly after its establishment and from time to time thereafter, of the anticipated volume of scrap exports from the Bizonal Area. It is hoped that this figure for the year ending Oct. 1, 1949, will be 1 million tons or more, over and above the 850,000 tons authorized above outside of future allocations.

Interim Authorizations Chargable Against Future Allocations

(6) As an advance against contemplated early allocations within the framework of the regular allocating procedure, there shall also be authorized a further 125,000 tons to the United States, 125,000 tons to the United Kingdom, and 125,000 tons to other countries, such quantities to be charged against future allocations. The two Military Governors shall also implement these authorizations immediately.

(7) In the event that no recommendation is made by the ad hoc Committee before Oct. 31, 1948, further interim authorizations shall be made on that date and on the last day of each month thereafter in the ratio of 2-2-1 for the United States, the United Kingdom, and other countries, respectively, until such time as the regular allocation procedure is in operation.

Implementation of Allocations

(8) In implementing this agreement, the US and UK Military Governors shall determine among other matters:

(a) whether to implement allocations by control over contracts or control over exports or both;

(b) whether, if control over exports is adopted, the Joint Export-Import Agency may approve contracts within agreed limitations in excess of the total outstanding allocations of any country;

(c) whether, in appropriate cases, contracts shall provide for delivery of scrap within specified short periods in order to prevent undue tying up of allocations in individual long-term contracts;

(d) whether and in what manner to instruct JEIA to take precautions to satisfy itself as to the competence of contracting parties to implement the terms of the contract.

Effective Date of Foregoing Authorizations

(9) All scrap exported subsequent to the date of this agreement shall be charged against the foregoing authorizations.

Booty Scrap

(10) There shall be no further exports of booty scrap after the date of this agreement except for the 75,000 tons authorized under paragraph II-3-(b) above.

Price

(11) The price of scrap with appropriate differentials for loading points, quality of scrap, etc., shall be uniform for all foreign buyers, and shall be set from time to time by the US and UK Military Governors under such procedures as they may establish.

Special Measures

(12) If the US and UK Military Governors consider that adequate quantities of exportable scrap cannot be obtained without special measures, they are authorized to approve the recovery of scrap by such measures. Scrap recovery under such arrangements, if approved, may be out-

(CONTINUED ON PAGE 124)

Iron Age Study Shows Metalworking Industry Breakdown by Areas

New York

• • • **The Chicago** industrial area, embracing five counties, ranks as the largest metalworking center in the U. S. by number of plant workers employed, according to a study of the industry just completed by THE IRON AGE. The survey shows that Chicago, with 447,412 plant workers, leads Detroit in second place with 397,975 plant workers in the metals processing field.

The 10 leading metalworking industrial areas in the country, according to the study, are as follows:

City Area	No. of Plant Workers	Percent of National Total
Chicago	447,412	8.16
Detroit	397,975	7.26
Pittsburgh	241,453	4.41
Newark	230,138	4.20
Jersey City		
Cleveland	202,474	3.69
New York	171,045	3.12
Philadelphia	168,556	3.08
Los Angeles	155,999	2.85
Milwaukee	138,243	2.52
Bridgeport	132,138	2.41
New Haven		
Waterbury		

State and area breakdowns show New York state to include 1763 metalworking plants with a total of 511,031 plant workers, in fifth place among the states. The basic marketing data compiled by THE IRON AGE treats seven major industrial areas in New York state. Metropolitan New York, including 7 counties, shows 171,045 plant workers in the metals field, or about 33 pct of the state total and 3.1 pct of the national total. Buffalo is the second largest area in the New York state study with 97,506 plant workers, 19 pct of the state total and 1.7 pct of the national total. Rochester, Syracuse, Albany-Schenectady-Troy area, Binghamton-Elmira area, and Utica follow in that order.

The industrial area breakdowns are one part of the study which has been in progress for more than a year. The first part, containing a summary of the national totals for the industry, has been published in a booklet which is now available. The two later sections, including plant worker and product information are broken down by 48 states and by 93 industrial areas in 21 states.

Recognizing the inadequacies of statistical data originating in prewar years, THE IRON AGE last year began to build a completely new body of statistical information on the metals field. Firm names were gathered from all sources, and 50,000 plants were canvassed by mail questionnaires.

New Statistical Information Overcomes Inadequacies Of Previous Data

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By OLIVER JOHNSON
Director of Research

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When a barrage of successive mailings failed in some cases to bring in the desired replies, the staffs of three independent research organizations were employed to conduct field interviews. The intent was to define the primary market of the average metalworking firm in this country.

When the project was temporarily halted this year to permit tabulation and classification, the list of 50,000 firms had been whittled down to 16,836 representing 95.5 pct of the industry. These factories show a total plant worker employment of 5,480,994. Of this total, it may be said that 2147 plants and 988,444 workers are engaged in primary metal production, while 14,689 plants and 4,492,550 plant workers are in metalworking operations.

All industrial activity in the study has been classified according to the new government standard classification manual. Following this manual, the metalworking and metal producing industry has been broken down into 160 different product classifications.

More Radar on the Rivers

Pittsburgh

• • • **Complete radar** equipment now has been installed on three river towboats, Cornell, Lehigh, and Pennsylvania of Union Barge Line Corp. The installations were made while these vessels were docked at Dravo Corp.'s marine ways, Neville Island recently.

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NO RADIO INTERFERENCE: *One of GE's engineers checks radio interference while an aluminum casing is welded with General Electric's new non radio interfering inert arc welder. Welders formerly used for this process emitted high frequency radio signals which caused serious interference on home radios. The duration of welder-caused noise has now been reduced to 1/25 of a sec.*

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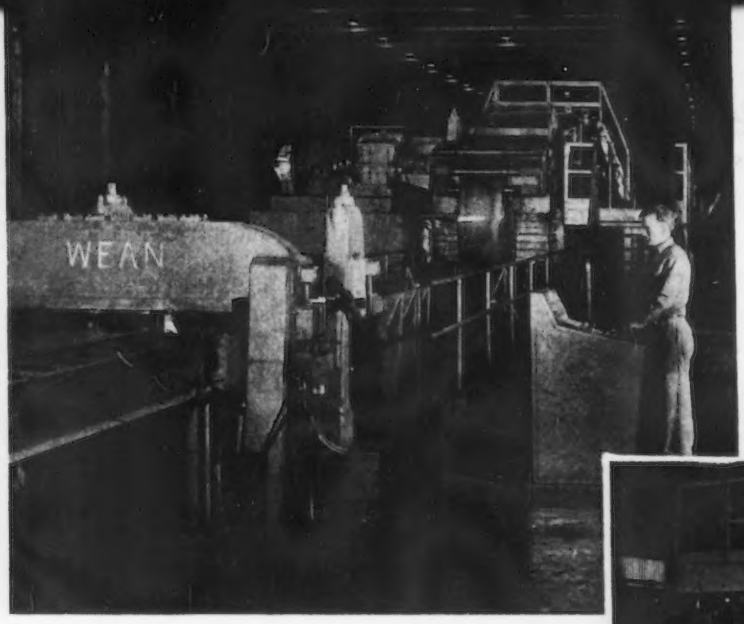
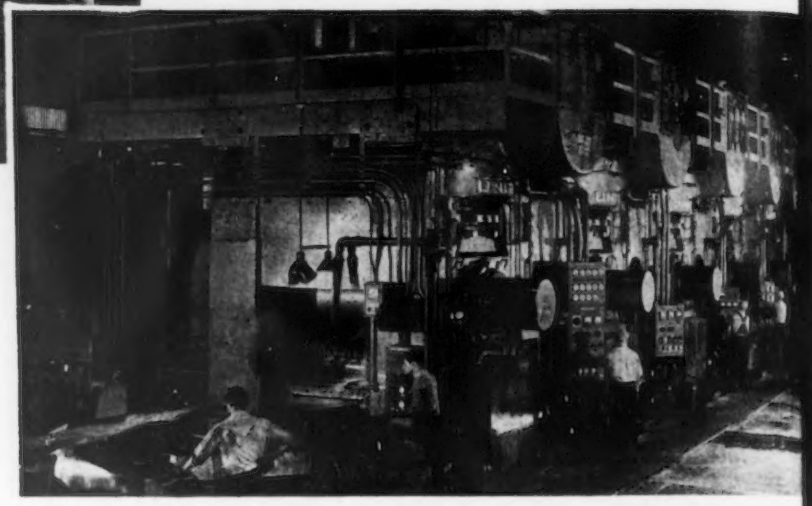
New West Coast Tinplate Mill N

By BILL PACKARD

Ass't News-Markets Editor

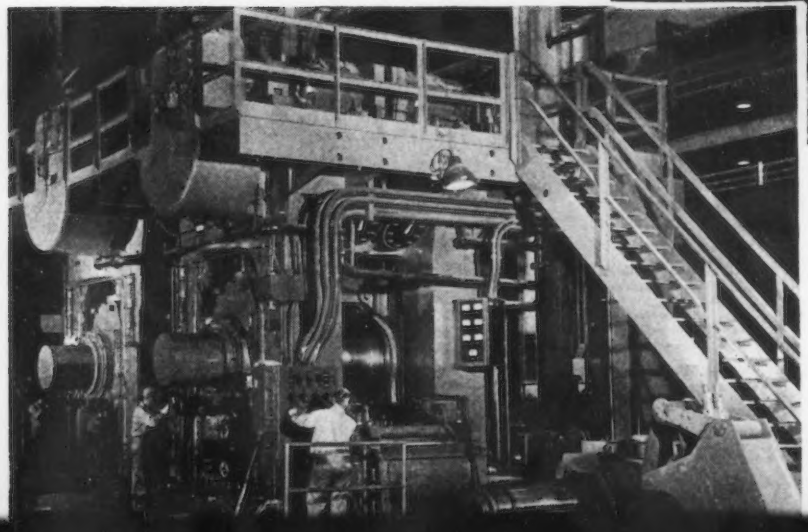


• GETTING PICKLED — Coils intended for processing into sheets and tin plate on the cold reduction mill at Columbia Steel Co. are first run through the continuous pickling unit to clean them. Photo above shows coils entering pickling line after being joined in the stitcher.



• SQUEEZE PLAY—Pickled and recoiled, steel is taken to cold reduction mill (abo where it is rolled to near desired final thickness and again coiled. Finishing speed of t five-stand, tandem, four-high cold-reduction mill is about 3900 fpm.

• TO THE CLEANERS — After being rolled, steel passes through electrolytic cleaning lines (right). Steel is shown emerging from cleaning line after oil, picked up in rolling operation, has been removed. Speed here is 2000 fpm.



• FOR BEAUTY—Clean coils are now ready for two-stand temper mill like that shown at left. Here precision thickness, temper and desireable surface characteristics are achieved. Steel is then ready for shearing into proper size.

Mill Means 300,000 Tons More Finished Steel for Industry

New York

• • • **The opening of a new cold-**rolled sheet and tinplate mill at Columbia Steel Co.'s Pittsburg, Calif., plant is U. S. Steel's answer to the growth of formidable competition on the West Coast. Opening ceremonies today (Oct. 21) for the new facilities of this important subsidiary will be attended by executives and directors of the corporation, as well as other interested groups.

Of more interest to steel consumers on the West Coast than these opening ceremonies, however, is the significance of more than 300,000 net tons more finished steel products annually for West Coast industry.

A large portion of this new mill capacity will be devoted to the production of tinplate for cans and containers. This is significant.

The West Coast has an annual consumptive capacity of 10 million base boxes of tinplate. Previously, the nearest source of supply for this area was Chicago, more than 2500 miles distant.

Pricewise, West Coast tinplate consumers will not in the beginning fare as well as might be expected at first glance. Price of tinplate at Pittsburg, Calif., is $15 a ton more than at eastern and midwestern producing points.

One of the chief reasons for this higher price is that hot-rolled steel for cold reduction in the mill will be shipped to Columbia Steel from other U. S. Steel subsidiaries. Cost of freight thus incurred is naturally reflected in the higher price for western tinplate.

In an effort to reduce these costs, Columbia Steel Co. has filed an application with Pacific Freight Traffic Bureau asking a lower freight rate. The company is asking for a rate of $8.71 per gross ton for steel shipped from Geneva, Utah, to Pittsburg, Calif.

Initially, steel for the first months of operation will come from producing points in Alabama, Pennsylvania and Ohio. But as current conversion of the Geneva, Utah plant to peacetime output progresses, more and more of the supplies for the new mill will be shipped from that source. Eventually, hot-rolled coils from Geneva will play an important part in the operation and growth of Columbia's new mill.

Columbia Steel Co.'s Mill Will Use Hot Rolled Coils From Geneva, Utah Plant

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The Geneva plant was purchased by U. S. Steel from the government on June 19, 1946. This war plant was built by the corporation for the government. During the war it produced ship plates, billets and structural shapes. It is still in the process of being converted to peacetime output. Geneva steel is made from Utah ore, coal and limestone.

Since coils from Geneva will supply the new mill, it will not be necessary for Columbia Steel to reduce output of any of its other products. In fact output of these other products will be increased because steel from Columbia open-hearths will be diverted entirely to them, instead of being used to supply the new sheet and tinplate mill.

Canada, Too

Hamilton, Ont.

• • • Seventeen days prior to the official opening of Columbia Steel Co.'s new mill the Steel Co. of Canada, Ltd., held "Open House" ceremonies marking the inauguration of a new cold rolling strip mill.

This is the first Canadian mill capable of rolling the lighter gages used in the manufacture of tin cans, office equipment, furniture and a host of other fabricated steel products.

The mill has a rated capacity of 350,000 tons a year. It has cost $10 million, with $5 million more needed to complete auxiliary equipment. Initially, only about 100,000 tons are expected to be produced annually, since the company is already operating to the limit of its pig iron and ingot capacity.

The biggest immediate saving the new mill will bring to West Coast tinplate consumers will be in time. The time delay in shipping tinplate to this area has been more frustrating to consumers in short supply than the cost of freight. One important consumer who formerly had to wait a month or more for shipments to reach him will now receive delivery from the new mill within 2 days of shipment.

This drastic reduction in shipping time is probably the greatest advantage of the new mill. As one consumer pointed out, "tinplate on a freight car or a boat isn't helping anyone." "And a lot of badly needed tinplate has been tied up in transit for much too long, especially in the face of the tight supply situation."

Inauguration of this new mill comes at a time when the industry is still being criticized by some who feel that expansion of capacity has been insufficient and slow. But the corporation cites it as an important milestone in its program of additions and improvements launched after V-J Day. This program includes the expenditure of more than $130 million in the West and in excess of $850 million in the entire country. Expansion costs at Columbia will amount to about $25 million.

New production units which have been installed in the mill include a continuous pickling line; a five-stand, tandem, four-high cold reduction mill; two electrolytic cleaning lines; 10 cover-type rectangular annealing furnaces which can be moved by overhead crane to 30 different bases; two two-stand, tandem four-high temper mills; three tinplate shearing lines; one tinplate side trimming and recoil line; a single-stand, four-high, sheet temper mill; a sheet shearing line for cold-rolled strip; two auxiliary sheet shearing lines; a sheet galvanizing line; 14 hot-dip tinning lines and auxiliaries; an electrolytic tinning line; and 16 mechanical assorting, reckoning and piling lines for tinplate.

Tinplate will be produced by

Industrial Briefs . . .

• BUYS PLATING PLANT—The Doehler-Jarvis Corp. has announced the acquisition of the former Gordon manufacturing plant, located on the Dixie Highway in Toledo. The new facilities will be equipped for plating large diecastings produced in the present Toledo Doehler-Jarvis plant.

• BUILDING SMELTER — Phelps Dodge Corp., New York, has announced the award of a construction contract to Foley Bros., Pleasantville, N. Y., covering the erection of a smelter plant at Ajo, Ariz., on a fixed fee basis. The plant will have an estimated capacity of 100 million lb of copper per year.

• GOLDEN JUBILEE—The American Nickeloid Co., Peru, Ill., manufacturers of preplated metals, is celebrating its fiftieth anniversary this year.

• NITRIC ACID PLANT — The General Chemical Div. of the Allied Chemical & Dye Corp. has awarded the Wigton-Abbott Corp., Plainfield, N. J., the contract for the construction of a large modern nitric acid manufacturing plant and a steam-generating plant at Newell, Pa.

• CHANGES NAME—The Utility Electric Steel Foundry has changed its name to Utility Steel Foundry and is now located at 3320 East Slauson Ave., Vernon, Calif.

• AWARDS MEDAL—For his leadership in developing the billion-dollar synthetic aliphatic industry, James A. Rafferty, vice-president of the Union Carbide & Carbon Corp., New York, has been awarded the Chemical Industry Medal for 1948 by the American Section of the Society of Chemical Industry.

• SALES OUTLET—Cimcool Div. of the Cincinnati Milling Machine Co., Cincinnati, has announced the opening of a new direct Cimcool sales office located at 4053 Lindell Blvd., St. Louis. M. R. Skirvin will be in charge of the new office.

• TAKES OVER—National Lead Co. has announced that it has taken over the business of Titanium Alloy Mfg. Co. The Niagara Falls plant which produces compounds of zirconium and alloys of titanium, will be operated as a division of National Lead Co.

• TO HEAD GROUP—T. E. Veltfort, manager, Copper & Brass Research Assn. has been elected president of American Trade Assn. Executives, at the organization's annual meeting held at Chicago recently.

• ACQUISITION—The Fenn Mfg. Co. of Hartford and New Britain has announced that it has acquired from Standard Machinery Co. of Providence its main line of machinery manufacture. During the next 3 months the acquired lines will be moved to the Hartford and New Britain plants of Fenn.

• BRITISH TOOL STEELS—Ackerlind Steel Co., Inc., 394 W. Broadway, New York, has been appointed distributor for William Jessop & Sons, Ltd., Sheffield, England, manufacturers of special alloy and tool steels.

• DISTRIBUTOR—The Corey Co., 81 Murray St., New York, has been appointed distributor for the Sterling Mfg. Co., Cleveland. The company will handle Sterling's complete line of ammeters, voltmeters, milliammeters and standard type instruments.

• NEW COMPANY — Announcement has been made of the establishment of the Walker Hydraulic Duplicator Co. at Standish, Mich., by C. E. Walker. The firm is offering one, two and three dimension precision hydraulic duplicating equipment for high speed production use.

two methods, hot-dip tinning and electrolytic tinning. Each setup has its own mechanical assorting, reckoning and piling lines. Modern material handling equipment, such as roller and belt conveyors and various sized lift trucks, will be used.

The people who will operate this new equipment are western men. However, a number of the supervisory staff, picked from Columbia's younger operating leaders, were sent to eastern and southern steel centers to learn the latest how-do-you-do-it in making flat-rolled products.

The long view significance of this new mill should prove of considerable benefit to the West Coast. It marks a further degree of integration in the western steel industry. In a very important amount, it frees producer and consumer alike from the shackles of high freight costs. It means more finished steel for the West Coast. For these reasons it should prove a boon to industry in this area.

M. A. Follansbee Will Head Follansbee Steel

Pittsburgh

• • • **M. A. Follansbee** has been elected president of Follansbee Steel Corp., Pittsburgh. He had been executive vice - president and vice-president in charge of sales prior to his appointment to the new position. At the same time, C. E. Christman, president and general manager, Federal Enameling & Stamping Co., McKees Rocks, Pa., was elected chairman of the board. They succeed Lauson Stone, formerly president and board chairman, who died recently.

M. A. Follansbee

Mr. Follansbee has been with the company since 1913 when he joined the operating department, except for a period of service during World War I. Prior to 1937, when he was made general manager of sales, he had been sales manager in the Chicago area. In 1941 he was elected a director and the following year became vice-president in charge of sales.

Federal Trade Commission Issues List of Don'ts on Basing Point

Interpretation Is Bound To Burn Up and Confuse Steel Officials

By GEORGE BAKER
Washington Bureau

Washington

• • • **The Federal Trade** Commission last week moved to fortify itself against possible congressional criticism relative to basing points.

With the initial hearing before the Capehart Subcommittee on Trade Policies only 2 weeks off, FTC issued a 4000-word statement setting forth its policy toward geographic pricing practices. Commissioner Lowell B. Mason did not participate in approval of the statement.

Since a number of members of Congress have been highly critical of FTC's failure to spell out for industry just what pricing policies it considers lawful, the issuance of the document may have been calculated by FTC to offset at least a part of this criticism.

But the new statement avoids any clear-cut stand in this direction. The commission does state, however, that it considers three types of cases open to question under the FTC Act. These it lists as:

(1) Single or multiple basing point systems used by competitors in such a way that delivered prices quoted by these competitors are typically identical.

(2) Systems of freight equalization used by competitors in such a way as to produce similar typical identities.

(3) Zone price systems used by competitors which result in identical delivered prices, the features of which upon examination of the facts appear to be inconsistent with separate and independent decision to adopt them.

The list of "don'ts" included in the commission's negative approach to the problem is then compounded by the warning against establishment of additional basing points.

The mere setting up of extra basing points—even with every mill as a base—does not, in the commission's eyes, remove the curse of identical delivered prices.

"Complexity and rigidity would be as characteristic of such a system as of systems with fewer bases," FTC opines in its statement, adding that "the freight absorption formula could be used as readily to bring about identical delivered prices and eliminate price competition."

Thus does the Trade Commission serve advance warning on the steel industry that any move to establish more bases will be as liable to prosecution as the pricing system attacked last year.

Here it is in the FTC's own nutshell: "The collusive character of basing point pricing is not destroyed as the number of basing points is increased."

Such illegality must be presumed, FTC continues, because—"the only significant difference between such a system of freight absorption and basing point pricing would lie in the elimination of phantom freight, which would remove some of the anomalies that make basing point systems appear highly artificial."

And this difference "is not sufficient to preclude a presumption that systematic industry-wide adherence to such a freight absorption formula is a collusive device," FTC adds.

In other words, the commission's rock-ribbed view here is that any sustained observance of a single or multiple basing point system that is in itself complex and rigid is also in itself substantial—even though not necessarily conclusive—evidence of collusion.

Turning to a discussion of pricing practices subject to the Clayton Act, the commission in effect states that f.o.b. selling is about the only sales method that will not make an industry liable to prosecution.

This left-handed warning to the steel industry and other industries is cloaked in such hints as: "In all forms of geographic pricing except the quotation of f.o.b. mill prices without freight equalization there are discrepancies between the freight charges incurred and the freight charges

EXPENSIVE LUXURY: *The 8-cylinder, 120 hp Isotta Fraschini is one of the 700 models recently exhibited at the 31st International Automobile show at Turin, Italy. The motor is built in the rear of this luxury model which sells for about* $7000.

included in the delivered prices."

"In f.o.b. mill pricing systems all of a seller's mill realizations are equal and all his delivered price differences are justified by differences in delivery cost, and therefore, become lawful regardless of injury," the commission believes.

It is therefore improbable, the commission reasons, that the defense of meeting competition can be successfully offered in cases involving systematic matching of delivered price quotations through single or multiple basing point systems.

In fact, it may also be presumed, the commission continues, that such defense will be unsuccessful in the case of industry-wide systematic freight equalization. "The courts appear to have assumed, though the point has not been squarely decided, that a single seller has a substantive right in good faith to meet the equally low price of a competitor in individual transactions," it observes.

But whether or not a single concern not engaged in creation of a monopoly through destruction of competition may systematically reduce prices to meet competition in areas where it habitually encounters such competition has not yet been decided.

The Capehart subcommittee, meanwhile, has scheduled open hearings for Nov. 9-19, inclusive. Representatives of the steel, cement, and beet sugar industries will be among the first to testify. The five members of the FTC are scheduled to present their views on the opening day of the hearings.

Venezulean Ore Outlook

New York

• • • Bethlehem's just about ready to hit the jackpot again. They've gambled before and come out on top. For some time they've been getting their Mayari ore from Chile. It took large investments and perseverance to develop the Chilean mines. They paid off. Now they've gone 168 miles up the Orinoco River in Venezuela to Mina El Pao to develop new reserves.

People have known about these reserves since 1890 when a preliminary survey was made. Sometimes the estimate has been placed at over 1 billion tons. How much there actually is, no one knows nor will know for some time because of the mountainous terrain. But right now Bethlehem figures they can get at upwards of 50 million tons that they know of.

It's a high grade hematite ore running about 69 pct iron, low in phos and free of vanadium and titanium. Moisture content is low and this should prove an advantage in holding down shipping costs when it comes to moving large tonnages.

The deposit now being worked on lies on the earth's surface like a saucer with quartz below and sedimentary deposits in the dish. The sediment has to be removed before they can get at the ore. But that's easily done. Then the ore can be moved out by open pit methods.

This location covers an area of about 16 sq mi. Bethlehem has 16 such locations down there, four of which are located in the vicinity of the present project.

If all goes well Bethlehem expects to be shipping out of this area by the end of 1949. Eventually they hope to move the ore out at the rate of 1.7 million tons a year.

Diesel engine trucks (there are ample oil supplies to the north) will be used to transport the ore to the primary and secondary crushers.

A 36 mile railroad and a 32 mile road are being constructed from the mining area downhill to Palau on the Orinoco. The grade of the first half of these roads will be so steep that braking will present a problem in transporting the ore to the loading facilities which are also now under construction. Large storage facilities will be installed here to handle the interferences that arise from high and low waters. Water levels fluctuate as much as 40 ft from time to time.

River barges—it is planned to move six 4000 ton barges at a time with a river boat—will transport the ore down the Orinoco to Puerto de Hierro where a trans-shipment station is being built on the Gulf of Paria right across from Port of Spain.

Here the barges will be unloaded directly into 25,000 ton steamers and shipped to Bethlehem's Sparrows Point plant. Storage facilities will also be provided here and present plans are to be able to stock about 70,000 tons.

The distance from El Pao to the trans-shipment station is about 250 miles. However, distance is not as big a factor to contend with as the shifting sand bars which extend for as far as 15 miles in some areas. This added to low waters makes construction of storage facilities both at Palau and Puerto de Hierro essential to assure a final continuous flow of ore from this area.

Construction work in the harbor is progressing satisfactorily. Dredging has been completed. The transfer docks, the fueling stations, etc., are going up. And when the job is completed, it is estimated that the harbor will have facilities to transship approximately 2000 tons annually. This will adequately take care of the tonnages of ore which Bethlehem expects to move out from El Pao.

Plant Relocations Due To F.O.B. Switch Not Boon to Vulnerability

Washington

• • • Relocation of plants as a result of switch-overs to f.o.b. selling will not necessarily increase vulnerability to military attack, according to the National Security Resources Board.

Arthur M. Hill, NSRB chairman, believes instead that "some relocation of industry may well represent a marked improvement from the national security standpoint where the present location is in a highly vulnerable industrial district."

Mr. Hill's views were made known last week in a letter responding to questions of military vulnerability raised by Senator Wiley, R., Wis.

NSRB has for some months been considering the Supreme Court's decision in the cement case with a view toward probable effects on industrial dispersion and national security, Mr. Hill said. He summarized the board's current opinion in three points:

(1) There will be little immediate effect because of the difficulties in constructing or moving plants.

(2) A general movement by steel consumers toward their sources of supply is not anticipated except in cases where the cost of steel is a major element in costs.

(3) The long-run effect in such deficit-supply areas as the midwest will more likely be a stimulation to steel production than a movement of steel consumers out of the area.

Honors Employees

Worcester

• • • The American Steel & Wire Co. of Worcester honored 233 employees, all of whom have served 25 years or more, at a dinner recently at the Hotel Sheraton.

End Of HR Sheets and Strip As Tonnage Products Might Be Near

Chicago

• • • **Consumers here** declare that the new National Steel Co. extras on hot-rolled sheets and strip, 16 gage and heavier, confirms the fact that this company no longer wants to book such business. Users further say that nobody in their right mind would now buy a hot rolled product from these mills (Great Lakes Steel Co., Ecorse, Mich., and Weirton Steel Co., Weirton, W. Va.) when cold rolled is so much cheaper.

Many observers expect other producers to eventually take similar action. If they do, it means that hot rolled sheets and strip will no longer be a tonnage product—they may become high priced specialties.

Some executives of Chicago mills say the new prices, which were effective Oct. 1, are the result of the metamorphosis of the sheet steel industry from hand mill to continuous mill producing methods.

Hand mills are practically gone. Only four large producers publish a price for hot rolled sheets 19 gage and lighter. The continuous hot mills have for some time produced the majority of hot rolled sheet and strip. The new prices at long last truly reflect the evolution of sheet and strip making practice, these men declare.

Other steel men do not agree with this thinking. They point out that National Steel Co. changed prices on sheet and strip 16 gage and heavier which are by nature continuous mill products. Further, they add, "The extent of the increases are ridiculously high."

Steel fabricators here consider it significant that the extra increase stops at 16 gage. This thickness is the lightest hot rolled sheet economically produced on continuous mill. They point out that all other hot rolled sheet price cards still include 18 gage. However, this 18 gage tonnage which is rolled on continuous mill, is used almost exclusively for steel drum production.

A study of the table will reveal the major differences between the new Great Lakes extras and those still in effect by Chicago mills, on sheets only. The size, gage and

Consumers Believe New Extras Mean Orders Not Wanted On These Products

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By D. I. BROWN
Chicago Regional Editor

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length of the sheets shown in the table were carefully chosen. It is felt that these sizes are truly representative and offer a fair comparison. It is impossible to demonstrate the difference in price on all sizes, gages, etc. The items chosen are bought in heavy tonnages.

It should be noted that the present Chicago price for hot rolled is so far below the Great Lakes hot rolled price that the carload freight rate from Chicago to Detroit, 44¢ plus 3 pct tax, could be added without exceeding the new f.o.b. price Ecorse, Mich. The drawing quality extra is included in the hot rolled price makeup because sheet mill metallurgists told THE IRON AGE "Hot rolled pickled sheets must be made in that qual-

See news item SO IT'S KNOWN *on p. 109 . . . Ed.*

Price Comparison Hot and Cold-Rolled Sheets
F.o.b. Producing Mill
Price—dollars per hundred lb

Hot-Rolled Sheets Pickled and oiled or dry Over 20 in. to 48 in. wide 100 to 120 in. long 12 gage	Great Lakes	Chicago Mills
Base	$3.45	$3.25
Gage & width	.55	.30
Length	.15	.00
Pickling	.50	.25
	$4.65	$3.80
Drawing quality	.50	.25
	$5.15	$4.05
14 gage		
Add Gage	.05	.10
Pickle	.10	.00
	$5.30	$4.15
16 gage		
Add Gage	.10	.10
	$5.40	$4.25

Cold-Rolled Sheets Commercial Quality Oiled or dry over 23 15/16 in. to 48 in. wide—60 to 171 in. long. 12 gage	Great Lakes	Chicago Mills
	$4.20	$4.00
	.20	.20
	.00	.00
	.00	.00
	$4.40	$4.20
14 and 16 gage		
Subtract	.15	.15
	$4.25	$4.05

Hot Rolled Pickled & Oiled or Dry 12 to 36 in. wide 60 to 124 in. long 24 gage	
Base (Don't make)	$4.15
Gage & width	.30
Length	.00
Pickling	.40
	$4.85
Drawing Quality	35
	$5.20

Cold Rolled Commercial Quality 12 to 36 in. wide 60 to 96 in. long oiled or dry. 24 gage	
	$4.20
	.50
	.00
	.00
	$4.70

	$4.00
	.50
	.00
	.00
	$4.50

Note—Great Lakes Hot Rolled 16 gage costs $23.00 a ton more than Cold Rolled 16 gage

ity in order to be equivalent in performance to cold rolled commercial quality sheets."

National Steel did not change any cold rolled prices. Consensus among trade sources here is that cold rolled prices will not be changed. The cold rolled items are included in the table so that the difference in price can be compared. National Steel did not change their hot rolled base price on the new card. Great Lakes and Weirton do not make hot rolled sheets and strip lighter than 16 gage. The 24 gage hot and cold rolled prices are shown merely to compare the present price of the hot rolled hand mill product with the heavier gage continuous mill product.

The major differences between the new National Steel strip extras and those of other producers are as follows: National Steel increased their gage extras on strip from $8.00 to $11.00. The $8.00 increase is on strip 6 to 12 in. wide from 0.2299 in. to 0.2031 in. thick. The $11.00 increase is on strip 1 to 1⅜ in. wide, 0.0365 in. to 0.0568 in. thick.

Great Lakes did not change any size extras on strip narrower than 1 in. wide. The pickling extra on strip is up $2.00 to $7.00. The $2.00 increase is on strip over 1 in. to 2 in. wide in 0.082 in. to 0.0568 in. thickness. The $7.00 increase is on strip 6 to 12 in. wide, 0.149 in. to 0.0822 in. thick.

Breakdown for pickling extras by gage is no longer the same as other producers. National Steel has lumped some former individual sizes into the same price bracket. This is particularly true in thicknesses ranging from 0.2299 in. to 0.0568 in. It has ordinarily been the practice throughout the industry to not charge an extra for lengths over 60 in. on strip.

Great Lakes now charges for any cut length and the only base length is when a full coil is ordered. The $3.00 per ton increase on cutting extra applies on the 30 to 60 in. wide strip. The $12.00 a ton increase is on strip 240 in. long and over.

National Steel inadvertently omitted the quantity discount in their new cutting extras. It is understood that this oversight will be corrected.

Cites Better Output Hopes; Deplores Some Optimistic Reporting

Detroit

• • • **"The best way** to get increased steel production right now is to increase the yield. Five pct increased yield throughout the industry is possible if labor and supervision would realize the importance of this goal and work together to achieve it."

This is the opinion of Julius A. Clauss, vice-president in charge of engineering, Great Lakes Steel Corp. His remarks were directed to the Detroit Chapter, Assn. of Iron & Steel Engineers meeting at Fort Shelby last week.

According to the Great Lakes engineer, many of the recent technical developments for increasing steel production show promise, but all will take time and money to perfect.

The speaker disclosed that Great Lakes has tried unsuccessfully to improve its blast furnace practice using a dry blast. While no new blast furnace is being designed without taking into consideration the possibility of high pressure blasting, Mr. Clauss said most steel companies are today standing by and watching the development of dry blast by one company.

Mr. Clauss stated it as his opinion that the use of oxygen in the openhearth, Bessemer converters and blast furnaces "is going to be one of the most startling and far-reaching inventions to hit the steel industry since the advent of the strip sheet mill to replace the old hand sheet mill." He warned his listeners, however, that oxygen in itself is not the entire answer to increased production, and other problems such as proper preparation of raw materials to cut down charging time are equally important.

If by preparing light scrap the number of charging boxes can be reduced from the present 200 to about 80, a saving of 1½ to 2½ hr in charging time is possible, the speaker continued. This saving plus 1½ hr saved during meltdown will increase production, without any question, from 25 to 40 pct, he declared.

Average production at Great Lakes today is at the rate of 14½ tons per hr per furnace. The speaker indicated that by the use of oxygen, partial blown metal from the Bessemer converter and necessary equipment to charge the furnace and remove the finished steel, openhearth production can be raised to 25 tons per hour and "perhaps up to 35 tons per hour per furnace."

"Glowing talk in the daily press about new processes that are going to revolutionize steelmaking and solve many of the steel industry's problems over night" were strongly deplored.

Mr. Clauss mentioned specifically articles recently appearing in the *New York Times* and *Life* magazine, but did not refer directly to THE IRON AGE, Aug. 19, which carried a story on a continuous casting development spon-

Coming Events

Oct. 22-25 Metal Treating Institute, annual meeting, Philadelphia.
Oct. 23-29 American Society for Metals, annual convention, Philadelphia.
Oct. 24-29 American Welding Society, annual meeting, Philadelphia.
Oct. 25-27 American Institute of Mining and Metallurgical Engineers, Metals Div., fall meeting, Philadelphia.
Oct. 25-27 American Gear Manufacturers Assn., fall meeting, Chicago.
Oct. 25-29 National Metal Exposition, Philadelphia.
Oct. 27-28 Society for Nondestructive Testing, annual convention, Philadelphia.
Oct. 28-29 Porcelain Enamel Institute, sales and management conference, Chicago.
Nov. 4-6 National Electronics Conference, Chicago.
Nov. 14-17 National Tool & Die Manufacturers Assn., annual meeting, Milwaukee.
Nov. 18-19 National Founders Assn., annual meeting, Chicago.
Nov. 28-Dec. 3 American Society of Mechanical Engineers, annual meeting, New York.
Dec. 2-4 Society for Experimental Stress Analysis, annual meeting, New York.
Dec. 6-8 Electric Welding Conference, Detroit.

Skill of 100 Years

New York

• • • **The "victories and failures" encountered in the development of the art of continuous casting were described at some length in THE IRON AGE (Aug. 19, p. 72). Included is an account of the work of Bessemer, Laing and others. It is complete with dates and patent numbers. The art of continuous casting is described by THE IRON AGE as the "accumulated skill of 100 years."—Editor.**

sored jointly by Republic Steel Corp. and Babcock & Wilcox Tube Co.

Mr. Clauss characterized the "boldly proclaimed" continuous casting process recently described in the trade and daily press as "old stuff." He presented a series of slides showing that a patent application for the manufacture of steel by a continuous method was submitted by Henry Bessemer in 1865. Other patents cited included those by George Brooke in 1888, Trotz in 1896, Benjamin Atha in 1890, Bildt in 1902, Rowley in France in 1916 and many others. During the discussion he called particular attention to the similarity in the earlier methods and the latest continuous casting process.

"It is obvious from the many patents issued that the continuous casting method is not new," he said, "and when supposedly reputable concerns broadcast across the country that they have discovered a new and revolutionary process, how, in the face of all the developments of the past can they make such claims?"

Drum Factory Reopens

New Orleans

• • • **Resumption of** operations on Oct. 1 by the Louisiana Steel Drum Co. on the Air Line Highway in Jefferson Parish has been announced by the New Orleans Assn. of Commerce.

The company was established 2 years ago but suffered destruction of its plant on March 6 of this year. The new plant, with 10,000 sq ft of space, cost $100,000 and will produce 1000 drums a day, according to Ben Uttal, manager.

Lone Star Co.'s Furnace Back Into Production

Daingerfield, Tex.

• • • **Lone Star Steel Co.'s** blast furnace is back in production. The furnace was shut down for extension of slag facilities and the installation of a carbon block bottom. The expanded slag facilities and the new block lining will increase the efficiency and production of the furnace. Already production of foundry iron at this plant has exceeded 88 pct of the plant's rated capacity, which is 970 gross tons per day.

Change Export Procedure

Washington

• • • **Under a change** in procedure, exporters of iron and steel products need only to certify that they have an accepted order as a basis for applying for a license. Previously it has been necessary to submit evidence of an order.

This new rule changes in no way the requirement that such an order must exist. The Office of International Trade, in order to assure compliance, will make spot checks by calling upon applicants, selected at random, to furnish the necessary documentary evidence.

Will Triple Output

Buffalo

• • • **Fedders-Quigan Corp.** will more than triple its output of air conditioning units at its Buffalo plant, E. A. Bonneville, sales manager of the Air Conditioner Div., announced.

The 1948 production was 6,000 units and the 1949 schedule calls for 20,000. The Fedders line has been expanded and new models will include a 3-ton and a 5-ton unit.

Group Elects Officers

Pittsburgh

• • • **The Acid Open Hearth** Research Assn. has begun its seventh year of continuous operation with an election of officers for the coming year.

G. S. Baldwin has been elected president; C. N. Arnold, vice president; F. C. T. Daniels, secretary; and A. R. Altman, treasurer.

The executive committee includes: F. H. Allison, R. W. Devine, H. E. Dowie, F. B. Foley, C. R. Funk, W. E. Harvey, R. J. Meyers and Dr. G. R. Fitterer, Director of Research.

The association has perfected and taught their members testing methods for the control of their acid open-hearth furnaces with the result that heats of predetermined quality at lower operating cost are available.

No Thank You

Washington

• • • Farm equipment producers last week again turned down a voluntary allocations program for distributing steel to their industry. At a meeting with the Dept. of Commerce, called only because of pressure from the Senate Small Business Committee, the Agricultural Equipment Industry Advisory Committee reiterated the stand they took last spring.

The committee agreed unanimously that while farm equipment demand was well ahead of available supplies, there is sufficient machinery to handle 1948 crops. With Public Law 395 due to expire next Mar. 1, the committee felt that it was not practical to consider a voluntary allocation program at this time.

With respect to the problems of small manufacturers of farm equipment, the committee was unable to recommend a satisfactory method of redistribution of steel within the industry.

Electroplaters Plan Meet

Philadelphia

• • • **Philadelphia branch** of American Electroplaters' Society is planning its first annual banquet in 8 years to be held Nov. 6 at the Broadwood Hotel. Festivities are slated to start at 1:00 p.m., and will continue into the evening.

Included among the speakers will be: Dr. William Blum, National Bureau of Standards; Dr. Walter R. Meyer, president Enthone, Inc.; Myron B. Diggin, technical director Hanson-Van Winkle-Munning Co.; and William M. Phillips, General Motors Corp. research laboratories.

AMERICAN IRON AND STEEL INSTITUTE

Production of Open Hearth, Bessemer and Electric Steel Ingots and Steel for Castings

YEAR 1948

(Preliminary)

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,768,497	95.5	343,169	77.5	361,110	79.0	7,472,776	93.6	1,686,857	4.43
February	6,245,338	94.3	340,596	82.3	354,270	82.9	6,940,204	93.0	1,676,378	4.14
March	6,841,578	96.6	363,235	82.0	403,322	88.2	7,608,135	95.3	1,717,412	4.43
1st Quarter	*19,855,413*	*95.5*	*1,047,000*	*80.6*	*1,118,702*	*83.4*	*22,021,115*	*94.0*	*1,693,932*	*13.00*
April	5,640,168	82.2	185,089	43.2	392,900	88.7	6,218,157	80.4	1,449,454	4.29
May	6,799,289	96.0	355,562	80.3	416,801	91.1	7,571,652	94.8	1,709,177	4.43
June	6,481,879	94.5	356,810	83.2	417,665	94.3	7,256,354	93.8	1,691,458	4.29
2nd Quarter	*18,921,336*	*90.9*	*897,461*	*69.0*	*1,227,366*	*91.4*	*21,046,163*	*89.7*	*1,617,691*	*13.01*
1st 6 months	*38,776,749*	*93.2*	*1,944,461*	*74.8*	*2,346,068*	*87.4*	*43,067,278*	*91.9*	*1,655,797*	*26.01*
July	6,348,057	89.8	324,991	73.6	395,610	86.7	7,068,658	88.7	1,599,244	4.42
August	6,631,157	93.6	371,205	83.8	435,246	95.2	7,437,608	93.1	1,678,918	4.43
September	6,591,611	96.3	387,153	90.5	435,170	98.5	7,413,934	96.1	1,732,228	4.28
3rd Quarter	*19,570,825*	*93.2*	*1,083,349*	*82.5*	*1,266,026*	*93.4*	*21,920,200*	*92.6*	*1,669,474*	*13.13*
9 months	*58,347,574*	*93.2*	*3,027,810*	*77.4*	*3,612,094*	*89.4*	*64,987,478*	*92.1*	*1,660,385*	*39.14*
October										4.43
November										4.29
December										4.42
4th Quarter										*13.14*
2nd 6 months										*26.27*
Total										*52.28*

Note—The percentages of capacity operated are calculated on weekly capacities of 1,599,286 net tons open hearth, 99,962 net tons Bessemer and 103,228 net tons electric ingots and steel for castings, total 1,802,476 net tons; based on annual capacities as of January 1, 1948 as follows: Open hearth 83,610,690 net tons, Bessemer 5,226,000 net tons, Electric 5,396,770 net tons, total 94,233,460 net tons.

* Revised.
† Preliminary figures, subject to revision.

YEAR 1947

Period	OPEN HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (Net tons)	Number of weeks in month
	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity	Net tons	Percent of capacity		
January	6,550,058	95.2	384,096	87.7	288,458	66.9	7,222,612	93.2	1,630,386	4.43
February	5,835,018	93.9	314,912	79.6	280,471	72.0	6,430,401	91.9	1,607,600	4.00
March	6,619,641	96.2	378,893	86.5	318,440	73.8	7,316,974	94.4	1,651,687	4.43
1st Quarter	*19,004,717*	*95.1*	*1,077,901*	*84.8*	*887,369*	*70.9*	*20,969,987*	*93.2*	*1,630,637*	*12.86*
April	6,365,670	95.5	375,675	88.6	310,497	74.3	7,051,842	93.9	1,643,786	4.29
May	6,640,004	96.5	372,878	85.2	326,132	75.6	7,339,014	94.7	1,656,662	4.43
June	6,317,705	94.8	351,247	82.8	308,762	73.9	6,977,714	92.9	1,626,507	4.29
2nd Quarter	*19,323,379*	*95.6*	*1,099,800*	*85.5*	*945,391*	*74.6*	*21,368,570*	*93.9*	*1,642,473*	*13.01*
1st 6 Months	*38,328,096*	*95.4*	*2,177,701*	*85.2*	*1,832,760*	*72.8*	*42,338,557*	*93.5*	*1,636,589*	*25.87*
July	6,033,512	87.9	256,125	58.6	289,048	67.2	6,578,685	85.1	1,488,390	4.42
August	6,329,497	92.0	346,033	79.0	315,622	73.2	6,991,152	90.2	1,578,138	4.43
September	6,152,348	92.5	334,425	79.0	310,684	74.6	6,797,457	90.8	1,588,191	4.28
3rd Quarter	*18,515,357*	*90.8*	*936,583*	*72.2*	*915,354*	*71.6*	*20,367,294*	*88.6*	*1,551,203*	*13.13*
9 Months	*56,843,453*	*93.8*	*3,114,284*	*80.8*	*2,748,114*	*72.4*	*62,705,851*	*91.9*	*1,607,842*	*39.00*
October	6,831,984	99.3	384,272	87.8	353,896	82.1	7,570,152	97.7	1,708,838	4.43
November	6,543,390	98.2	360,620	85.0	338,417	81.0	7,242,427	96.5	1,688,211	4.29
December	6,654,966	96.9	373,367	85.5	347,308	80.7	7,375,641	95.4	1,668,697	4.42
4th Quarter	*20,030,340*	*98.1*	*1,118,259*	*86.1*	*1,039,621*	*81.3*	*22,188,220*	*96.5*	*1,688,601*	*13.14*
2nd 6 months	*38,545,697*	*94.4*	*2,054,842*	*79.1*	*1,954,975*	*76.4*	*42,555,514*	*92.6*	*1,619,928*	*26.27*
Total	76,873,793	94.9	4,232,543	82.1	3,787,735	74.6	84,894,071	93.0	1,628,195	52.14

Note—The percentages of capacity operated are calculated on weekly capacities of 1,553,721 net tons open hearth, 98,849 net tons Bessemer and 97,358 net tons electric ingots and steel for castings, total 1,749,928 net tons; based on annual capacities as of January 1, 1947 as follows: Open hearth 81,010,990 net tons, Bessemer 5,154,000 net tons, Electric 5,076,240 net tons, total 91,241,230 net tons.

Weekly Gallup Polls . . .

Roundup Shows Dewey Strength Among Independents

Princeton, N. J.

• • • **Here is a guide** to national political sentiment as the 1948 Presidential campaign enters the final lap.

(1) Gov. Thomas E. Dewey today has a commanding lead in electoral votes, according to George Gallup, director, American Institute of Public Opinion. Surveys reported to date show the New York governor leading in 30 states, President Truman in 13, and Gov. J. Strom Thurmond, States' Rights nominee, in four, with the two major candidates tied in one state.

(2) In the most recent survey by the institute, candidates received the following percentages of the total popular vote, when the voters who are still undecided are eliminated:

	Pct
Governor Dewey	50
President Truman	44
Henry A. Wallace	4
Governor Thurmond	2
Others	*

*Less than one pct.

It should be kept in mind that the above figures reflect sentiment as of early October and that surveys now in progress may change today's percentages.

(3) Republicans have a real fight on their hands to keep control of the Senate and to maintain their present majority in the House of Representatives.

Although the institute has made no surveys in individual congressional races, and, therefore, is not in a position to forecast their outcome, the reader should remember two pertinent facts in following congressional elections.

The split in the ranks of the Democrats will be a far less important factor in these elections than in the presidential race for the simple reason that the Dixiecrats are supporting regular Democratic candidates and the Progressive Party has entered candidates in fewer than a fourth of all congressional districts.

More people in this country today call themselves Democrats than call themselves Republicans. In a study completed just last week in which voters were asked: "In politics, as of today, do you consider yourself a Democrat, a Republican, a Progressive, or Independent?" the answers of those who say they will vote on November 2, were as follows:

	Pct.
"Democrat"	44
"Republican"	35
"Progressive"	2
"Independent"	19

(4) Wallace will not carry a single state. In not one of the 48 states will he poll more than a small part of the total vote. Despite this, his effect on the Truman candidacy will be considerable, particularly in states where the vote is close, since Wallace draws far greater strength from those who voted Democratic in earlier presidential elections than from those who voted Republican.

Although polls are not infallible, no evidence has come to light yet which would support Wallace's claim of many millions of "hidden votes" for the Progressive party which polls have somehow failed to uncover.

(5) Gov. J. Strom Thurmond, States' Rights nominee, is taking electoral votes from Truman which are ordinarily considered assured for the regular Democratic candidate. The Dixiecrats ticket leads in 4 of the 13 traditionally Democratic states in the South. These states have a total of 38 electoral votes. The Thurmond candidacy is important in another respect. The votes which he takes away from Truman in two states—Florida and Virginia —makes it possible for Dewey to have a chance to carry these states.

(6) Based on New York City's registration figures, which have in the past provided a reliable index of national turnout, it is expected that approximately 47 million voters will go to the polls Nov. 2. The lack of interest in this election is best indicated by the fact that only approximately 50 pct of the potential voters will vote, whereas in earlier presidential elections the proportion was much higher. In 1900, for example, 75 pct of all potential voters went to the polls.

Dewey's Electoral Vote Lead Appears Substantial; GOP Will Have Fight To Hold Senate

° ° °

(7) Veterans of World War II are definitely not voting as a bloc although they give Wallace a slightly higher percentage of their votes than other voters. Institute figures show veterans giving Dewey 47 pct, Truman 43 pct, Wallace 7 pct and Thurmond 3 pct.

(8) Similar to the veteran's choices is the present attitude of the approximately 9 million young people who have come of voting age since 1944. They give Dewey 47 pct, Truman 44 pct, Wallace 7 pct and Thurmond 2 pct.

(9) While Democratic support in the ranks of organized labor has slumped markedly since 1944, President Truman still is the choice of a majority of labor union members. In 1944 a total of 72 pct of this group of voters supported Roosevelt, compared with only 55 pct who say they are for Truman. Wallace gets approximately 7 pct of the vote of organized labor which accounts for nearly half of the Democratic loss.

(10) One of the major indications pointing to a Republican victory is the large shift in sentiment among big city voters. Four years ago Dewey received only 39 pct of the major party vote in cities over 500,000 population. As of early October he leads in cities of that size with 47 pct of the total vote against 41 pct for Truman, 12 pct for Wallace, and less than 1 pct for Thurmond.

Construction Steel . . .

• • • **Fabricated steel awards** this week included the following:

1500 Tons, Corpus Christi, Tex., building for Tex-Mex Cement Co. through MacDonald Engrg. Co., Chicago, to Mosher Steel Co., Houston.

1300 Tons, Detroit, coal handling structure for the Detroit Edison Co., to Carnegie-Illinois Steel Corp., Pittsburgh.

1300 Tons, New York, Secretariat building for the United Nations, to American Bridge Co., Pittsburgh.

290 Tons, Duluth, State Highway Bridge No. 6501 through Minneapolis Bridge Co., to Bethlehem Steel Co., Inc., Bethlehem.

200 Tons, East Peoria, Ill., community high school building, to Bethlehem Steel Co., Inc., Bethlehem.

155 Tons, West Allis, Wis., plate girder span for the Chicago & Northwestern Railway to American Bridge Co., Pittsburgh.

150 Tons, Buffalo, University of Buffalo Law School through Siegfried Construction Co. to R. S. McManus Steel Construction Co.

100 Tons, Depew, N. Y., warehouse for Gould Storage Battery Corp., through Siegfried Construction Co. to R. S. McManus Steel Construction Co.

• • • **Fabricated steel inquiries** this week included the following:

2600 Tons, Cincinnati, transmission towers for the Cincinnati Gas & Electric Co.

420 Tons, Des Moines, Iowa, Fifth St. bridge for the State of Iowa, withdrawn from building.

235 Tons, King and Pierce Cos., Wash., White River bridge, Director of Highways, Olympia, bids to Oct. 29.

• • • **Reinforcing bar awards** this week included the following:

2000 Tons, Corpus Christi, Tex., building for Tex-Mex Cement Co. through MacDonald Engrg. Co., Chicago, to Sheffield Steel Corp., Kansas City.

100 Tons, Gadsen, Ala., courthouse and jail for Etowah County, to Truscon Steel Co., Birmingham, through J. F. Holley, Birmingham.

• • • **Reinforcing bar inquiries** this week included the following:

2150 Tons, Helena, Mont., Canyon Ferry dam and powerplant, Bureau of Reclamation, Helena, Spec. 2434, bids to Dec. 1.

50 YEARS AGO

THE IRON AGE, *October 19, 1898*

• "Lukens Iron & Steel Co. of Coatesville, Pa., owners of one of the best equipped and up to date plate mills in the country, are said to have been the first in the United States to make boiler plates. The original establishment of the works dates back to 1790, when Isaac Pennock, great grandfather of the present managers, built a mill and began the manufacture of iron at a place now called Rokely, situated on Buck Run, Chester County, Pa., about 4 miles south of Coatesville. In 1810 Mr. Pennock bought a saw mill property on the Brandywine at Coatesville, which he converted into an iron mill. This is where the large works now in operation is located."

• **"The number of business failures for the first 9 months of 1898 as reported by Bradstreets' was 8855. This is 27 pct smaller than in 1891, a year of large business but of heavy mercantile embarrassments. The return of normal conditions in the business world is indicated by the fact that the percentage of assets to liabilities is only 51 pct, whereas a year ago it was 55 pct."**

• "The first malleable iron castings made in the United States were produced in Newark, N. J., in 1815 by Seth Boyden. Reaumer, a Frenchman, had published the fundamental principles of the process in the year 1722 and some years later patents were granted in England for softening castings by annealing in ashes."

• **"Misrepresentation of goods is far too common a vice in the business world today. The worst of it is that it is so common as to call forth little or no censure. 'Trade custom' covers a multitude of frauds which are winked at and accepted even by those whose standard of morality in private life is beyond reproach."**

• "An inquiry is being made into the advantages of the vicinity of Tacoma, Wash., for the manufacture of iron and steel. The resources of the district in iron ore and coking coal are being tested to determine the advisability of building blast furnaces and finished iron and steel works."

Car Registrations Rise

Detroit

• • • **New passenger car** registrations for August may reach 340,000 to establish the highest single monthly total since 1941, according to R. L. Polk & Co., Detroit, statisticians for the automobile industry.

The best previous month this year was 330,555 established in April, 1948.

New truck registrations are continuing to run well ahead of 1947, Polk said. The agency estimated total August registrations at approximately 90,000 new trucks. During August, 1947, new truck registrations were only 40,120 units in 33 states compared with 47,988 this year.

Scrap Agreement

(CONTINUED FROM PAGE 112)

side regular allocations but subject to such special allocations as the US and UK Military Governors may determine after consultation with the ad hoc Committee.

Direct Recovery of Scrap

(13) Nothing in this agreement shall preclude operations by non-German organizations for the recovery of scrap from disarmament and other sources not readily accessible to German scrap merchants provided such operations are carried on in a manner acceptable to the US and UK Military Governors and that all recoveries of scrap (other than the 75,000 tons of booty scrap mentioned above) are paid for at prices established by the US and UK Military Governors and are within either the regular or the special allocations determined by the US and UK Military Governors.

US-UK Scrap Control Authority

(14) The US and UK Military Governors shall set up a US-UK scrap control authority in which each shall appoint a coordinator to supervise and control the collection and export of ferrous scrap. This control authority shall be subject, through whatever organization the Military Governors may determine, to the jurisdiction of the Bipartite Board.

III. Reservation of Fusion Agreement

Nothing in this agreement shall be deemed to modify the arrangements set forth in the Fusion Agreement of Dec. 2, 1946, as amended by the agreement of Dec. 17, 1947. Questions which may arise with respect to scrap exports under the present agreement will be resolved as contemplated in paragraph 5 of the agreement of Dec. 17, 1947, having regard also to the provisions of subparagraph 3(a) of the latter agreement.

Half of this message has to do with NORTHWEST products and processes for chemically cleaning ferrous and non-ferrous metals preparatory to plating, vitreous enameling, painting, etc., each problem involving a specific programing of one or more of the thirty-five standard NORTHWEST Cleaning Compounds including Electrolytic, Immersion, Solvent, Spray, and Water Wash types.

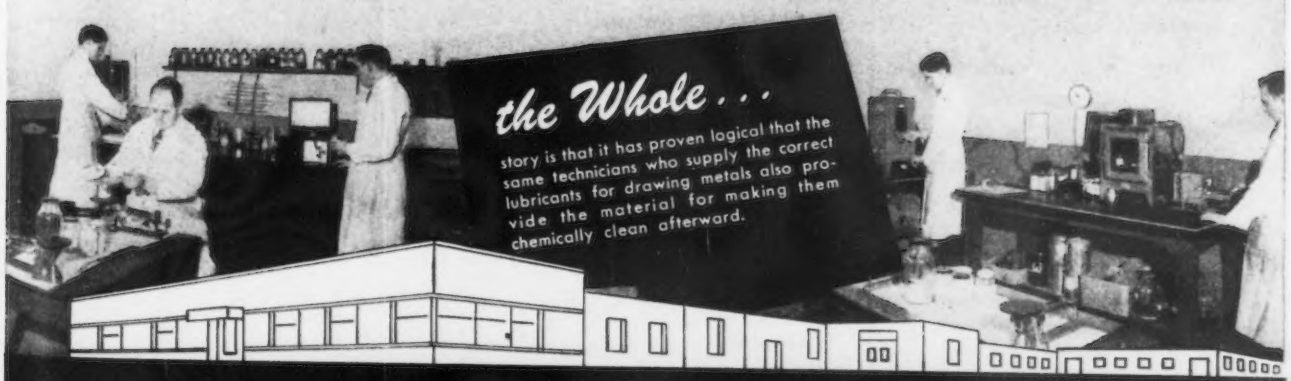
the "Lo-Hi" pH process of chemically cleaning metals, preparatory to plating, porcelain enameling, etc., makes practical a control that management can plan on in these departments regardless of the type of metal or soil.

HALF *pH control*

the other

HALF SUPER-DRAW

is concerned with metal forming lubricants developed for ferrous and non-ferrous metals in both pigmented and non-pigmented form . . . SUPER-DRAW products are specifically compounded for: 1. Brass and Brass Alloys, 2. Cold Rolled Steel, Enameling Iron, Stainless Steel and Aluminum, 3. Alloys of Steel, Aluminum and Copper . . . SUPERDRAW compounds will handle light, medium, and heavy operations . . . may be applied by brush, roller, spray, or dipping . . . A request on your letterhead will bring a technician to consult you on your drawing and cleaning problems . . .



the Whole . . .

story is that it has proven logical that the same technicians who supply the correct lubricants for drawing metals also provide the material for making them chemically clean afterward.

LO° HI pH

NORTHWEST CHEMICAL CO.

9310 ROSELAWN DETROIT 4, MICH.

pioneers in pH cleaning control — serving you since '32

Note your specific interest on the coupon below and attach to your letterhead. It will bring complete information.

pH Cleaning control

- Electrolytic ☐
- Immersion ☐
- Solvent ☐
- Spray ☐
- Water Wash (Paint Booth) ☐

Ferrous ☐ Non-Fers ☐

SUPER-DRAW *Metal Forming Lubes for:*

- Cold Rolled ☐
- Enameling Iron ☐
- Stainless Steel ☐
- *Special Alloys of:*
- Steel ☐ Brass ☐
- Aluminum ☐

Pgtd ☐ Non-Pgtd ☐

Westinghouse Organizes Atomic Power Division

Pittsburgh

• • • **Gwilym A. Price,** president of Westinghouse Electric Corp., has announced the formation of an Atomic Power Div. which will concentrate solely on the harnessing of nuclear energy for the production of useful power.

C. H. Weaver

According to Mr. Price, the new division "will be available to undertake atomic energy projects for the U. S. Government as well as to carry on independent studies. It will conduct research, development, engineering, and any necessary associated construction." It will work closely with the Westinghouse Research Laboratories and with other divisions of the company so as to benefit from their knowledge, experience and facilities.

Manager of the Atomic Power Div. will be Charles H. Weaver, a young Westinghouse executive who has recently served as industrial manager of the company's central district with headquarters in Pittsburgh.

Mr. Weaver joined Westinghouse in 1936. During the war years he served as manager of the Westinghouse Marine Dept. which, from 1945 on, included aviation activities also.

Foremen Get Together

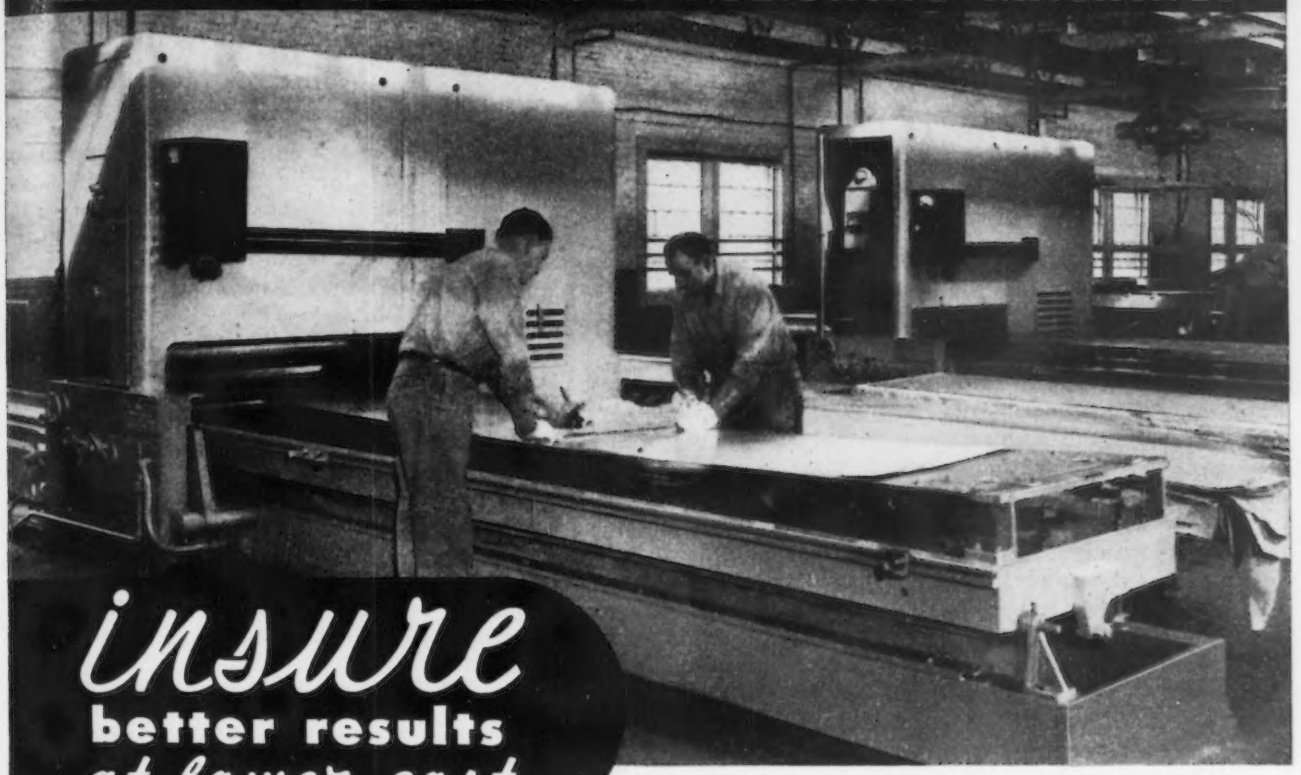
Peoria, Ill.

• • • **Wire Mill** foremen of the Keystone Steel & Wire Co. were hosts recently to the wire mill foremen of the Mid-States Steel & Wire Co., Crawfordsville, Ind., subsidiary of Keystone.

This sixth annual get-together headquartered at the Jefferson Hotel at which John A. Moritz, Keystone's Wire Mill superintendent, was master of ceremonies at a dinner which concluded activities.

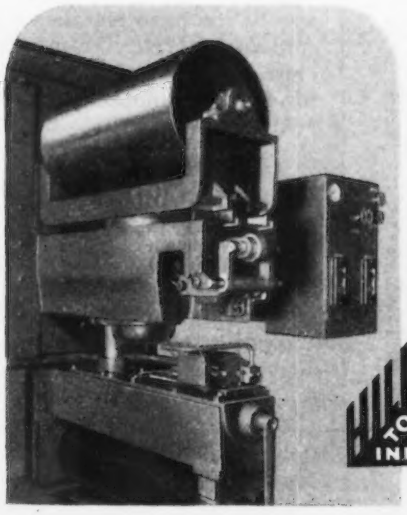
Plans at Peoria were developed by a committee consisting of John L. Sanderson, chairman, Henry G. Cordes, J. G. Weiss, A. H. DeYoung, and Oran Bryne.

IMPROVED GRINDING & POLISHING MACHINES



insure
better results
at lower cost

Grinding and polishing stainless steel on "HILL" 48" x 12' 2-Roll Vertical Abrasive Belt Hydraulic Table Sheet Machines



The "HILL" 2-Roll Vertical Head design covers basically an upper steel idler roll and a lower rubber covered contact or work roll (both dynamically balanced) over which the abrasive belt travels. Endless coated abrasive belts 10'6" long are used on all "HILL" 2-Roll Vertical Grinding and Polishing Machines. Research and experience has proven this short belt to be considerably more economical and practical than longer belts generally used. Time consumed in changing belts is drastically reduced, and the cost of the 10'6" belt is decidedly lower.

The "HILL" Sheet Grinder and Polisher has a rugged, all fabricated steel table, actuated by 100% hydraulic drive, providing instantly variable speeds up to 100 f.p.m. Table widths are 36", 48" and 60"; lengths range from 60" to 240".

A test run to your specifications with the new, improved "HILL" Sheet Grinding and Polishing Machine will convince you that older type machines are obsolete from the standpoint of economy and efficiency. Bulletin GP-3 supplies additional details. When writing for information, please indicate size and specifications of stock to be finished.

HILL ACME TOOLS FOR INDUSTRY

THE HILL ACME COMPANY

6400 BREAKWATER AVENUE • CLEVELAND 2, OHIO

"HILL" GRINDING AND POLISHING MACHINES • HYDRAULIC SURFACE GRINDERS • ALSO MANUFACTURERS OF "ACME" FORGING THREADING • TAPPING MACHINES • "CANTON" ALLIGATOR SHEARS • PORTABLE FLOOR CRANES • "CLEVELAND" KNIVES • SHEAR BLADES

Historic Bell Restored With Low Heat Welding

New York

• • • **A church bell** cast 282 years ago in Switzerland, in 1666, has been successfully restored with the use of Eutectic Low Heat alloys, manufactured by Eutectic Welding Alloys Corp., 40 Worth St., New York.

The damaged section contained three large cracks and required only 8½ lb of Eutecrod 18FC for complete restoration. Eutecrod 18FC is a "ready-flux-coated welding alloy" for use on copper, brass, and bronze which replaces ordinary brazing techniques. Its low heat point of application eliminates the dangers of high heat welding and produces dense, homogenous welds with no distortion to the shape of the bell.

Eutecrod 18FC is coated with a flux coating, a product of long years of Eutectic Research for a flux coating that will protect the base metal and facilitate welding. It is non-fuming with any of the non-ferrous metals and Eutecrod 18FC bonds at 1390°F. Its tensile strength is 57,000 psi.

The bell which weighs almost 500 lb and stands 2½ ft high, was preheated to 450°F and restored with Eutecrod 18FC in record time with no overheating or damage to the base metal. Its tone is said to be highly satisfactory for church purposes and may be put to use for another 282 or more years.

Expands Plant Facilities

Clyde, Ohio

• • • **Clyde Porcelain** Steel Corp. has started construction on a $2 million plant expansion program, according to C. C. Wells, president of the company, which will increase plant area 70 pct.

The new plant will permit additional manufacturing facilities for Bendix home appliances that include dryers and ironers.

Important effects of the program include an increase in the weekly payroll to exceed $5.5 million and a personnel increase from 1350 to 1900.

The construction schedule calls for sufficient completion to permit operation of one production line before the end of the year.

UP goes material-handling efficiency

when you use Battery Industrial Trucks

Greater efficiency in material handling means greater earning power in any plant. Start paring unnecessary moves for production hands or warehouse men and you not only reduce handling cost per unit, but make way for volume never before possible.

Battery industrial trucks are the dependable, economic means of obtaining such efficiency. They can perform their strenuous tasks 24 hours a day every day if required, and their power characteristics are outstanding: instant starting; quiet operation; no fumes; no power used during stops. Driven by electric motors, they have a minimum of wearing parts and are inherently trouble-free.

Keeping these hard-working trucks on the job calls for EDISON Nickel-Iron-Alkaline Batteries. Built of rugged steel, yet precise as a watch, they are recognized for dependability, long life and trouble-free operation. Specify EDISON and you specify maximum reliability—enduring quality.

EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

ADVANTAGES OF EDISON NICKEL-IRON-ALKALINE BATTERIES:

They are durable mechanically; can be charged rapidly; withstand temperature extremes; are foolproof electrically; can stand idle indefinitely without injury; are simple and easy to maintain.

EDISON STORAGE BATTERY DIVISION OF THOMAS A. EDISON, INC., WEST ORANGE, N. J.
In Canada: International Equipment Company, Ltd., Montreal and Toronto

Pig Iron Production For Canada Is Up In August Over 1.5 Pct

Toronto

• • • **Canadian pig iron** production for August amounted to 191,383 net tons or average daily rate of 82.1 pct, which compares with 187,940 tons or 80.6 pct in July and with 166,878 tons or 71.6 pct for August 1947. Output for the month under review included 157,904 tons of basic iron of which 146,946 tons were for further use of producing companies and 10,958 tons for sale; 21,159 tons of foundry iron of which 1479 tons were for further use and 19,680 tons for sale, and 12,323 tons of malleable iron, all for sale.

During August 12 of the 14 furnaces were in blast, and furnace charges included 342,352 tons of iron ore; 38,973 tons of mill cinder, scale, sinter, etc., and 8166 tons of scrap iron and steel.

For the 7 months ending with August cumulative pig iron production totalled 1,411,016 net tons, and compares with 1,297,184 tons for the like period of 1947 and with 986,989 tons in the 1946 period.

Ferroalloys produced in August amounted to 12,700 net tons compared with 12,939 tons in the month immediately preceding and with 11,398 tons in August 1947. Output for the month under review included by tonnage, ferrosilicon, silicomanganese, ferromanganese, ferrochrome, chrom-x and ferrophosphorus.

For the first 7 months this year production of ferroalloys totaled 115,292 net tons against 101,550 tons in 1947 and 81,247 tons in 1946.

Following are comparative monthly production figures for 1948 in net tons:

	Pig Iron	Ferroalloys
January	160,042	17,125
February	151,123	11,823
March	172,675	14,293
April	170,785	14,474
May	193,305	18,436
June	183,763	13,502
July	187,940	12,939
August	191,383	12,700
Total	1,411,016	115,292

Licenses Leaded Stainless

Chicago

• • • **Inland Steel Co.** has given the M. W. Kellogg Co. a license to produce stainless Ledloy steel. This is a patented process that Inland owns. They have previously

licensed several other companies in this country to produce carbon and alloy Ledloy steel.

Ledloy is produced by introducing small amounts of lead into the molten metal as it is being poured into the mold. It is claimed that machinability of Ledloy has been increased as much as 100 pct through the lead additions and that tool life is prolonged substantially. The lead addition reportedly does not affect the physical properties of the steel.

M. W. Kellogg, a subsidiary of Pullman Co., recently perfected a special process for casting stainless steels.

European Letter

(CONTINUED FROM PAGE 106)

The third aim of the new campaign was mentioned only briefly by Zhadnov, since it could only be of indirect concern to the Communist parties of Europe. This was the launching of an attack upon the rear of the capitalist system by backing and reinforcing local nationalist movements in southeast Asia and in the colonies.

THIS, then, was the triple program of the Cominform—to undermine the Marshall Plan, to impose total Communist control on eastern Europe and to stir up difficulties in the colonial world—and now that a year has passed since the campaign was launched, some attempt can be made to assess its effectiveness. The first effort, to check and undermine the Marshall Plan, has had only very limited success. In fact, were the Marshall Plan confined to 1948 alone, the Communists, particularly the Communists of France and Italy, would have to admit failure. Last November, the attempted general strike in France petered out and, as a result, a mass of workers left the *Confédération Générale du Travail* and joined or formed independent unions. In Italy, the April elections which were to have swept the Left to power ended in a resounding victory for the Christian Democrats.

On the second aim, the consolidation of eastern Europe, a similarly hesitant judgment must be passed.

EUROPEAN LETTER

On the one hand, a social revolution of major proportions has been forced through. The execution of Petkov in Bulgaria, the condemnation of Maniu and the emergence of Anna Pauker in Rumania, the crushing of the Social Democrats in Hungary, Rumania and Bulgaria, the disappearance of the Peasant Party in Poland have all been accomplished and, at the end of February, the most bourgeois of all eastern European countries—Czechoslovakia—was forced from one week to the next into the rigid framework of a people's democracy. Today, Communist rule is absolute from one end of the Iron Curtain to the other.

AT the same time, each country has purged its own Communists, and dropped all pretense of having local Communist interests separate from those of Moscow. In each country the change of policy, coupled with the purge within the party, has led to great tension and uneasiness. In Poland, it even ended in a sensational change in party leadership, Mr. Gomulka going into semi-disgrace in spite of recantation and new power passing to the men of Moscow, President Bierut and Jacob Berman.

But the immediate aim of diverting western attention and resources eastwards and of disrupting Far Eastern production has at least been partially realized, and it is no use disguising the fact that it is among these backward colonial peoples that the Soviet Union is likely to find its most fervent recruits.

One salient fact surely emerges from the record of 1948. It is that the Cominform, like Mr. Molotov's diplomacy or Mr. Vyshinsky's rhetoric, has had in reality an effect exactly opposite to that intended by its Russian instigators. The aim was to defend the vital interests of the Soviet Union, to weaken and divide its enemies, and to safeguard it against the risk of war. But instead of dividing Russia's enemies, it has united them. Instead of lulling them, it has roused them. Instead of disarming them, it has driven them reluctantly to consider the possibility of war. For one year's work of a body founded solely to safeguard the security of the Soviet Union, this is surely a very momentous and quite disastrous result.

Canadian Ingot Output Up 5.6 Pct In August

Toronto

• • • **Canadian production** of steel ingots and castings for August amounted to 263,054 net tons or average daily rate of 81.6 pct of total capacity and compares with 244,872 tons in July when the daily average was 76 pct, and with 233,754 tons in August 1947. For the month under review output included 254,362 tons of steel ingots and 8692 tons of steel castings.

Charges to steel furnaces in August included 144,027 tons of pig iron; 72,374 tons of scrap of consumers' own make and 72,725 tons of purchased scrap.

For the 7 months ending Aug. 31, 1948, production of steel ingots and casting totaled 2,103,522 net tons compared with 1,949,372 tons in the 1947 period and with 1,674,282 tons in 1946.

Following are comparative monthly production figures for 1948 in net tons:

	Steel Ingots	Castings
January	247,768	8,958
February	230,183	9,463
March	275,349	10,677
April	254,315	9,951
May	279,688	9,879
June	249,710	9,655
July	238,104	6,768
August	254,362	8,692
Total, 1948	2,029,479	74,043

Wage, Price Rises Hit French Steel Industry

Paris

• • • **Steel officials** are working on a new round of wage and price increases here which it is expected will be substantial.

Reliable sources predict that wages and salaries in the iron and steel industry will be advanced about 15 pct and that a corresponding price increase of from 14 to 17 pct will be passed on to steel consumers to balance the wage hikes.

In the meantime railroads are working out freight increases that might run as high as 22 pct on coal and 30 pct on goods freight.

After the freight increases are announced it is likely that the prices of steel products will fall at the higher side of the anticipated range, or nearer a 17 pct increase.

ECA Orders Not Expected to Reach U. S. Builders Until 1950

Export Manager Bases Gloomy Predictions on Business, Political Conditions

o o o

• • • **Machine tool** orders under ECA may not reach United States machine tool builders before 1950, according to Noble B. Clark, export manager, Warner & Swasey Co.

Mr. Clark based this gloomy prediction on first-hand observation of business and political conditions during a 10-week trip covering major European production centers and machine tool markets. He returned last week.

Anticipating greater competition in the future from British and European machine tool manufacturers, Mr. Clark pointed out that many machine tools formerly manufactured in Germany are being made in England.

He reported an active demand for the bigger, special United States machine tools on the part of European customers. This demand includes such machines as boring mills, big lathes, etc., adding that European and British machine tool builders are able to make the other machines themselves.

According to Mr. Clark, European governments are not interested in obtaining machine tools or other capital equipment on loans because of their fear of being reoccupied and having the equipment taken away.

Noble B. Clark

European countries are interested in outright gifts of machinery, but are unwilling to tie themselves to loan payments for such equipment, although the Russian situation seems much more alarming in the United States than it does in Europe, he pointed out.

In his opinion, ECA's immediate potential is $100 million, but as additional European requirements are authorized or approved, this might grow to $150 or $175 million.

He said orders "justified" or authorized at the present time include $15 million for Italy; France, $40 million; Holland, $5 million; Belgium, $2 million.

"I'm not nearly as optimistic as when I went over," he concluded.

* * *

In Detroit there is more optimism among machine tool builders and dealers than was evident a week ago. Additional orders have been received for the automatic transmission equipment for Chevrolet at Saginaw, it is reported. A few placements by Packard have also been received. Requests for quotations on new equipment to be installed at Detroit Gear Div. of Borg-Warner Corp. continue to come in. This is believed to be the Ford automatic transmission job.

In addition to automatic transmission tooling, there was evidence that General Motors may soon return to a machine tool buying mood. Nothing spectacular has come up other than the Saginaw transmission job, but a scattering of tool room equipment orders may indicate the beginning of fairly extensive modernization program, according to some sources.

Some new orders were placed last week by Chevrolet Gear & Axle, it is reported. Phantom orders for machine tools continue to be a topic of conversation in Detroit, but the volume up to the present time has been very small.

Detroit tool and die shops are very low at the moment, the volume of die work in the shops today being at the lowest point since the end of the war. It is not expected there will be a measurable pickup in this segment of the industry until orders for fixtures come through from the car makers.

It was learned in Philadelphia that the Bureau of Aeronautics is in the early stages of a buying program for machine tools, most of which are for set-aside. Large sums are being talked about for this program, but it is still too early to be sure that it will be authorized. The Bureau of Ships program is further advanced, but nondefense order volume is reported to have declined somewhat in the past few weeks. As yet, all the tool orders involved in the phantom program have not gone out to builders.

In Chicago, it appears that standard machine tool sales volume will be much better in October than it was in September. Sellers expect October business to be equal that of August, which was a very good month.

Several heavy basic defense inquiries have piled up in recent days. It is reported that one large wartime manufacturer of 105-mm gun carriages has asked for bids on the duplicate of all the machinery which was used in this high volume production line plant during the war. No contracts have been given this manufacturer to make gun carriages. The whole program is strictly in the paper stage. In fact, the Munitions Board will not arrive for 2 or 3 weeks to sit down and go over the program with this manufacturer.

Rock Island Arsenal, however, is stirring. They are asking for immediate delivery on some special machinery. It is very possible that some of this machinery may be shipped to them out of Army ordnance stockpiles. Other makers of guns such as 90-mm, 4.7 A and 155 are looking over the new ordnance designs in order to get their plans and thinking up to date.

MORE STEEL COMING FOR DSC CUSTOMERS

New Detroit Steel Corp. New Haven Mill Progress from Jan. 1. to Oct. 1, 1948

Dependable Dan Our Customers' Man Invites Correspondence Regarding Your Normal and Regular Requirements

Frankly, we may be unable to accept new business now, but looking ahead, we would like to keep you informed about our expanding facilities.

Here's How We're Going to Have More Steel for You...

Now under construction . . . a big, new cold rolled strip mill in New Haven, Conn., scheduled to begin rolling by January 1, 1949 . . . to give Eastern customers 60,000 tons additional producing capacity . . . practically at their stockroom doors.

Improvements at our Detroit mill to step up that unit's producing capacity to 150,000 tons a year . . . to increase the supply of cold rolled strip available to Midwestern customers by about 35,000 tons a year.

And D. S. C. Reminds You . . . That our Detroit mill . . . our Reliance Division network and our Craine-Schrage Steel Division will continue to do everything possible to keep your production rolling . . . giving every account equitable consideration . . . constantly planning and working toward greater production and supply . . . and towards higher standards of steel service.

DETROIT STEEL CORPORATION

PRODUCERS OF COLD ROLLED STRIP STEEL

DETROIT 9, MICHIGAN

RELIANCE STEEL DIVISION

PROCESSORS AND DISTRIBUTORS OF JOB-FITTED SHEET AND STRIP STEEL

General Office: 1025 South Oakwood Ave., Detroit 25, Mich.
Plants: Chicago, Cleveland, Detroit, Lyndhurst, N. J., Worcester, Mass.
Sales Offices: Grand Rapids, Indianapolis, New Haven, Philadelphia, St. Louis, Toledo
Products: SHEETS—Hot Rolled . . . Hot Rolled Pickled . . . Cold Rolled . . . Long Terne . . . Galvanized; PLATES; COLD ROLLED STRIP STEEL—Coils and Cut Lengths . . . Slit or Round Edge . . . All Tempers.

★ ★

CRAINE-SCHRAGE STEEL DIVISION

DISTRIBUTORS AND DIRECT MILL REPRESENTATIVES

Warehouse and General Office: 8701 Epworth Blvd., Detroit 4, Mich.
Sales Offices: Grand Rapids, Toledo, Indianapolis
Products: Cold Drawn and Hot Rolled Carbon and Alloy Steel Bars . . . Tool Steels . . . Drill Rod . . . Wire Rope, etc.

NONFERROUS METALS

. . . News and Market Activities

Further Consumer Copper Losses Through Stockpiling Unlikely

New York

• • • **Consumers are not** expected by the trade to suffer any important additional loss of copper to the stockpiling program as the result of the meeting of domestic and some foreign producers last week with government officials. It was proposed by the government that the stockpiling program be placed on a voluntary allocations basis under the provisions of Public Law 395 which is now being used for the regular allocations of steel and pig iron to consuming industries determined to be most essential. This proposal was turned down by industry members who stated the belief that adequate tonnages of copper could be obtained for the stockpile by negotiations direct between the government's purchasing agency and the individual producers.

The copper tonnage objective to mid-1949 was revealed at the meeting by government officials to be 10,000 tons a month, the same figure previously indicated as the minimum monthly tonnage set for the third quarter 1948. Many industry members believe that there will be no serious difficulty in setting aside that monthly tonnage without disrupting the civilian market and creating inflationary pressures on the copper market. At the meeting, government spokesmen accepted the viewpoint of the industry as to stockpiling by means of unilateral agreements, but indicated that if the tonnages were not obtainable, other means would be sought.

The meeting was generally harmonious, but industry members voiced certain objections to methods employed for purchasing copper for stockpiling. Producers feel that there is an inadequate procedure for soliciting and following up all factors in the market at regular intervals. Offers of copper to the stockpile have been held up for weeks without an acceptance, but it is understood that acceptances are now obtainable within 48 hr. Payment for copper deliveries are held up for an unreasonable time

Government Asks Stockpiling On Voluntary Allocation Basis Under PL 395

o o o

Producers and consumers have been under the impression that a program is under way by which marginal production is being encouraged for stockpiling purposes by negotiating contracts with individual producers for production over a long term period at prices above the domestic market. Producers who have looked into this situation have learned that no mechanism has yet been set up to contract for such marginal production.

There were at the copper meeting last week producers from South America, Canada, and Mexico. Government departments represented included the Munitions Board, Dept. of Commerce, Bureau of Federal Purchase, Bureau of Mines, National Security Resources Board and the Justice Dept.

Meetings were scheduled early this week for producers of lead, zinc, antimony and cadmium. There is no doubt that these meetings will develop more important criticism of the stockpile objectives of lead and zinc particularly because of the more critical shortages of these metals. Important producers of lead believe that a stockpiling program is not necessary for war preparation. Zinc producers point out that there is already a large zinc strategic stockpile accumulated over the last year when the extra tonnage was available. Right now is no time to continue adding to the zinc stocks they say.

There was no change in the strike situation at the zinc operations of the American Zinc, Lead & Smelting Co. The present outlook is for the stalemate to continue for some time to come. A run off election to determine the bargaining agency for the lead operations of the St. Joseph Lead Co., now back at work, resulted in a majority vote for no union at all. It will probably be another year before there is any further election at these works.

Brass scrap grades increased ½¢ per lb this week. This was due to the reentry of ingot producers into the market and higher refinery prices being offered. Type metals have not yet been affected by the recent increase in the antimony market. There were no changes in the red metal ingot market as most buying factors are still largely out of the market.

Aluminum ingot prices rose by ½¢ per lb last week. Aluminum foundries are back in the market buying actively. Scrap prices were raised two weeks ago.

Good news for zinc consumers, and to a lesser extent to lead cussumers is involved in the fact that Bunker Hill & Sullivan Mining Co. bought out the Pend Oreille Mining Co. at Metalline Falls, Wash. which was a small zinc and lead producer. They plan to spend $1 million with a possible ultimate $3.5 million to build zinc and lead production in the next few years.

Nonferrous Metals Prices

	Oct. 13	Oct. 14	Oct. 15	Oct. 16	Oct. 18	Oct. 19
Copper, electro, Conn.	23.50	23.50	23.50	23.50	23.50	23.50
Copper, Lake, Conn.	23.625	23.625	23.625	23.625	23.625	23.625
Tin, Straits, New York	$1.03	$1.03	$1.03	$1.03	$1.03	$1.03
Zinc, East St. Louis	15.00	15.00	15.00	15.00	15.00	15.00
Lead, St. Louis	19.30	19.30	19.30	19.30	19.30	19.30

Primary Metals

(Cents per lb, unless otherwise noted)

Aluminum, 99+%, 10,000 lb, freight allowed	17.00
Aluminum pig	16.00
Antimony, American, Laredo, Tex.	38.50
Beryllium copper, 3.75-4.25% Be dollars per lb contained Be	$20.50
Beryllium aluminum 5% Be, dollars per lb contained Be	$40.00
Cadmium, del'd	$1.90
Cobalt, 97-99% (per lb)	$1.65 to $1.72
Copper electro, Conn. Valley	23.50
Copper, lake, Conn. Valley	23.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium, dollars per troy oz.	$110 to $120
Lead, St. Louis	19.30
Lead, New York	19.50
Magnesium, 99.8+%, f.o.b. Freeport, Tex.	20.50
Magnesium, sticks, carlots	34.50
Mercury, dollars per 76-lb flask, f.o.b. New York	$75 to $78
Nickel, electro, f.o.b. New York	42.90
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$93 to $96
Silver, New York, cents per oz.	77.50
Tin, Grade A, New York	$1.03
Zinc, East St. Louis	15.00
Zinc, New York	15.65
Zirconium copper, 20 pct Zr, per lb contained Zr.	$8.75

Remelted Metals

Brass Ingot

(Published prices, cents per lb delivered, carloads)

85-5-5-5 ingot		
No. 115	20.00*	22.00
No. 120	19.50*	21.50
No. 123	19.00*	21.00
80-10-10 ingot		
No. 305	....	27.25
No. 315	....	24.25
88-10-2 ingot		
No. 210	....	33.00
No. 215	....	31.00
No. 245	24.50*	25.75
Yellow ingot		
No. 405	16.50*	17.50
Manganese bronze		
No. 421	....	23.00

*F.o.b. Philadelphia.

Aluminum Ingot

(Cents per lb, lots of 30,000 lb)

95-5 aluminum-silicon alloys	
0.30 copper, max.	27.00–27.50
0.60 copper, max.	26.75–27.25
Piston alloys (No. 122 type)	24.00–24.50
No. 12 alum. (No. 2 grade)	23.50–24.00
108 alloy	23.75–24.00
195 alloy	23.50–24.00
13 alloy	26.50–27.00
AXS-679	24.00–24.50

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95 pct-95½ pct	24.25–25.25
Grade 2—92 pct-95 pct	24.00–25.00
Grade 3—90 pct-92 pct	23.25–24.00
Grade 4—85 pct-90 pct	23.00–23.50

Electroplating Supplies

Anodes

(Cents per lb, freight allowed, in 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	40½
Electrodeposited	34⅜
Rolled, oval, straight, delivered	37.34
Ball anodes	38⅜
Brass, 80-20	
Cast, oval, 15 in. or longer	35⅞
Zinc, oval, 99.99	22.50
Ball anodes	20.50
Nickel 99 pct plus	
Cast	59.00
Rolled, depolarized	60.00
Cadmium	$2.00
Silver 999 fine, rolled, 100 oz. lots, per troy oz, f.o.b. Bridgeport, Conn.	84½

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	46.00
Copper sulfate, 99.5 crystals, bbls.	9.10
Nickel salts, single or double, 100 lb bags, frt. allowed	18.50
Nickel chloride, 300 lb bbl.	24.50
Silver cyanide, 100 oz. lots, per oz.	65
Sodium cyanide, 96 pct domestic 100 lb drums	16.00
Zinc sulfate, crystals, 22.5 pct, bags	5.90
Zinc sulfate, 25 pct, granules, bbls. frt. allowed	7.90

Mill Products

Aluminum

(Base prices, cents per pound, base 30,000 lb, f.o.b. shipping point, freight allowed)

Flat Sheet: 0.188 in., 2S, 3S, 26.9¢; 4S, 61S-O, 28.8¢; 52S, 30.9¢; 24S-O, 24S-OAL, 29.8¢; 75S-O, 75S-OAL, 36.3¢; 0.081 in., 2S, 3S, 27.9¢; 4S, 61S-O, 30.2¢; 52S, 32.3¢; 24S-O, 24S-OAL, 30.9¢; 75S-O, 75S-OAL, 38¢; 0.032 in., 2S, 3S, 29.5¢; 4S, 61S-O, 33.5¢; 52S, 36.2¢; 24S-O, 24S-OAL, 37.9¢; 75S-O, 75S-OAL, 47.6¢.

Plate: ¼ in. and heavier: 2S, 3S, F, 23.8¢; 4S-F, 26¢; 52S-F, 27.1¢; 61S-O, 26.6¢; 24S-F, 24S-FAL, 27.1¢; 75S-F, 75S-FAL, 33.9¢.

Extruded Solid Shapes: Shape factors 1 to 4; 35.1¢ to 66¢; 11 to 13, 36.1¢ to 78¢; 23 to 25, 38.2¢ to $1.07; 35 to 37, 45.7¢ to $1.65; 47 to 49, 67.5¢ to $2.41.

Rod, Rolled: 1.064 to 4.5 in., 2S-F, 3S-F, 34¢ to 30.5¢; Cold-finished, 0.375 to 3.5 in., 2S, 3S, 36.5¢ to 32¢.

Screw Machine Stock: Drawn, ¼ to 11/32 in., 11S-T3, R317-T4, 49¢ to 38¢; cold-finished, ⅜ to 1½ in., 11S-T3, 37.5¢ to 35.5¢; ⅜ to 2 in., R317-T4, 36.5¢ to 33.5¢; rolled, 1 9/16 to 3 in., 11S-T3, 35.5¢ to 32.5¢; 2⅛ to 3⅜ in., R317-T4, 32.5¢ to 31.5¢. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in.: 2S, 36¢ to 26.5¢; 52S, 44¢ to 32¢; 56S, 47¢ to 38.5¢; 17S-T4, 50¢ to 34.5¢; 61S-T4, 44.5¢ to 34¢; 75S-T6, 76¢ to 55¢.

Magnesium

(Cents per lb, f.o.b. mill, freight allowed Base quantity 30,000 lb)

Sheet and Plate: Ma, FSa, ¼ in., 54¢-56¢; 0.188 in., 56¢-58¢; B & S gage 8, 58¢-60¢; 10, 59¢-61¢; 12, 63¢-65¢; 14, 69¢-74¢; 16, 76¢-81¢; 18, 84¢-89¢; 20, 96¢-$1.01; 22, $1.22-$1.31; 24, $1.62-$1.75. Specification grade higher.

Extruded Round Rod: M, diam. in., ¼ to 0.311, 58¢; ½ to ¾, 46¢; 1¼ to 1.749, 43¢; 2½ to 5, 41¢. Other alloys higher.

Extruded Square, Hex. Bar: M, size across flats, in., ¼ to 0.311, 61¢; ½ to 0.749, 48¢; 1¼ to 1.749, 44¢; 2½ to 4, 42¢. Other alloys higher.

Extruded Solid Shapes, Rectangles: M, in weight per ft, for perimeters of less than size indicated, 0.10 to 0.11 lb. per ft. per. up to 3.5 in., 55¢; 0.22 to 0.25 lb per ft, per. up to 5.9 in., 51¢; 0.50 to 0.59 lb per ft, per. up to 8.6 in., 47¢; 1.8 to 2.59 lb per ft, per. up to 19.5 in., 44¢; 4 to 6 lb per ft, per. up to 28 in., 43¢. Other alloys higher.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057, ¼ to 5/16, $1.14; 5/16 to ⅜, $1.02; ½ to ⅝, 76¢; 1 to 2 in., 65¢. 0.065 to 0.082, ⅝ to 7/16, 85¢; ⅝ to ¾, 62¢; 1 to 2 in., 57¢. 0.165 to 0.219, ⅝ to ¾, 54.5¢; 1 to 2 in., 53¢; 3 to 4 in., 49¢. Other alloys higher.

Nickel and Monel

(Cents per lb, f.o.b. mill)

	Nickel	Monel
Sheets, cold-rolled	60	47
Strip, cold-rolled	66	50
Rods and shapes		
Hot-rolled	56	45
Cold-drawn	56	45
Angles, hot-rolled	56	45
Plates	58	46
Seamless tubes	89	80
Shot and blocks	..	40

Copper, Brass, Bronze

(Cents per pound, freight prepaid on 200 lb)

	Extruded Shapes	Rods	Sheets
Copper	36.78	....	37.18
Copper, hot-rolled	....	33.28	....
Copper, drawn	....	34.28	....
Low brass	38.07*	34.85	35.16
Yellow brass	36.76*	33.44	33.75
Red brass	38.55*	35.33	35.64
Naval brass	33.92	32.67	38.61
Leaded brass	....	28.30	....
Commercial bronze	39.29*	36.32	36.63
Manganese bronze	37.51	36.01	42.11
Phosphor bronze, 5 pct	57.80*	56.30	56.05
Muntz metal	33.47	32.22	36.66
Everdur, Herculoy, Olympic, etc.	40.43	40.67	41.73
Nickel silver, 10 pct	....	46.42	44.20
Architectural bronze	....	....	32.33

*Seamless tubing.

Scrap Metals

Brass Mill Scrap

(Cents per pound; add 1¢ per lb for shipments of 15,000 or more)

	Heavy	Turnings
Copper	21⅛	20⅜
Yellow brass	18	17⅛
Red brass	19¾	19
Commercial bronze	19¾	19
Manganese bronze	17¾	16⅞
Leaded brass rod ends	17¾	

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery.)

No. 1 copper wire	20.25
No. 2 copper wire	19.25
Light copper	18.25
Refinery brass	18.25*

*Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to producer.)

No. 1 copper, wire	19.50
No. 2 copper, wire	18.50
Light copper	17.50
No. 1 composition	16.25
No. 1 comp. turnings	15.50
Rolled brass	12.00
Brass pipe	12.50
Radiators	13.25
Heavy yellow brass	11.50
Aluminum	
Mixed old cast	15.00
Mixed old clips	15.25
Mixed turnings, dry	13.00
Pots and pans	15.25
Low copper	17.00—17.25

Dealers' Scrap

(Dealer's buying prices, f.o.b. New York in cents per pound)

Copper and Brass

No. 1 heavy copper and wire	17½—18
No. 2 heavy copper and wire	16½—17
Light copper	15½—16
Auto radiators (unsweated)	11½—12
No. 1 composition	13½—14
No. 1 composition turnings	13 —13½
Clean red car boxes	11 —11½
Cocks and faucets	11 —11½
Mixed heavy yellow brass	8½— 9
Old rolled brass	10 —10½
Brass pipe	11½—12
New soft brass clippings	13¼—14
Brass rod ends	11 —11½
No. 1 brass rod turnings	10¼—10¾

Aluminum

Alum. pistons and struts	8 — 8½
Aluminum crankcases	9½—10
2S aluminum clippings	12 —12½
Old sheet & utensils	9½—10
Borings and turnings	5 — 5½
Misc. cast aluminum	9½—10
Dural clips (24S)	9½—10

Zinc

New zinc clippings	10½—11
Old zinc	8¼— 8¾
Zinc routings	4½— 5
Old die cast scrap	5 — 5½

Nickel and Monel

Pure nickel clippings	22 —23
Clean nickel turnings	17 —18
Nickel anodes	22 —23
Nickel rod ends	21 —22
New Monel clippings	15½—16½
Clean Monel turnings	11 —12
Old sheet Monel	13 —14
Old Monel castings	10 —11
Inconel clippings	12 —13
Nickel silver clippings, mixed	8 — 8½
Nickel silver turnings, mixed	6½— 7

Lead

Soft scrap lead	18 —18½
Battery plates (dry)	11¾—12¼

Magnesium Alloys

Segregated solids	8 — 9
Castings	4½— 5½

Miscellaneous

Block tin	82 —84
No. 1 pewter	65 —67
No. 1 auto babbitt	51 —53
Mixed common babbitt	14¾—15¼
Solder joints	19¾—20¼
Siphon tops	50 —52
Small foundry type	20 —20½
Monotype	19 —19½
Lino. and stereotype	18 —18½
Electrotype	16½—17
New type shell cuttings	15 —15½
Hand picked type shells	6½— 7
Lino. and stereo dross	9½—10
Electro dross	6½— 7

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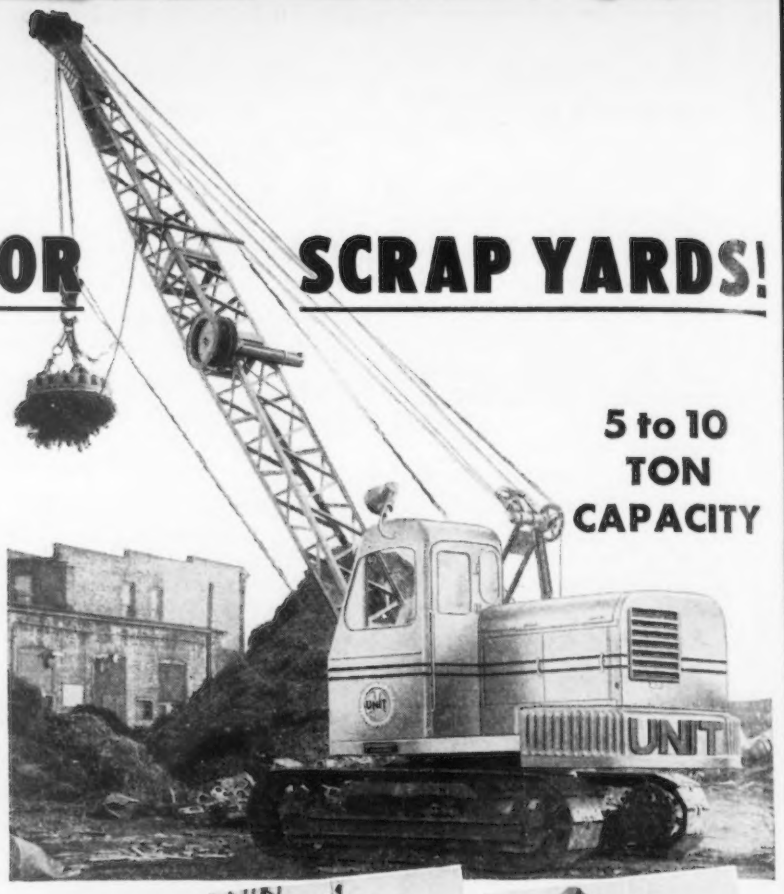

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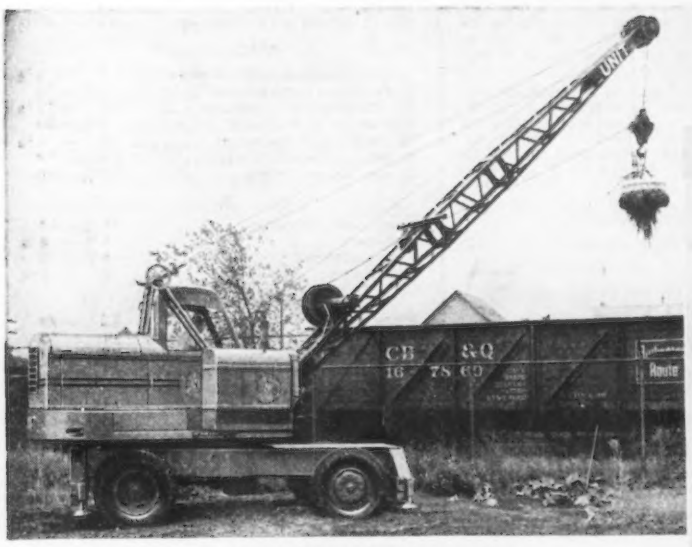

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Market Is Firm; Demand Exceeds Supply

New York

• • • **The scrap picture is unchanged this week. There were a few minor price changes but none of major significance. Shipments moved in good volume generally and demand was strong as usual despite some tapering off of receipts by some of the large mills who are better situated in their stockpiling at present than they had anticipated months ago.**

An IRON AGE survey of German scrap shipments received in this country thus far showed that total shipments received within the last year ran about 100,000 tons. It is expected that even under favorable conditions surrounding shipments from abroad, the best we could have by Christmas would be about 200,000 tons. This is only a drop in the bucket since the mills will purchase somewhere around 23 million tons of scrap this year.

There has been talk of lower prices, market weakness and price resistance. However, the market remains static pricewise, as far as demand is concerned and generally as to shipment movements. Some sources argue that mills have hamstrung themselves through earmarking arrangements and that prices cannot go down because scrap prices are inextricably tied to new steel prices. The other prop they add, is the scrap being bought by ingot makers for the conversion market.

•

PITTSBURGH—The price resistance in this market for the past few weeks has turned into price weakness on several grades. Openhearth steel is unchanged. The top price on railroad specialties is off $1 to a quotation of $59.50 to $60. Low phos which slid 50¢ is quotable at $49 to $50. Heavy breakable cast was up 50¢. Scrap rails were 50¢ higher. Mixed yard cast was off 25¢. A shortage of gondolas is hurting shipments into the district. This is common at this time of the year but now seems to be worse than usual. Carnegie-Illinois has ordered some substantial tonnages diverted to Chicago mills to permit its German scrap to be laid down here.

•

CHICAGO—Inland Steel Co. last week had the largest scrap inventory in its history. Other mills are also quite comfortable. "What's keeping the price up?" many are asking. Market men in answer to this question say that through earmarking arrangements the mills have inadvertently hamstrung themselves. The scrap price is in most cases inextricably tied to the new steel prices, these men declare. Unless the mills throw away their earmarking arrangements the price can't weaken very much until new steel prices come down. The other major prop to present prices is, of course, scrap being bought by ingot makers for the conversion market. The price of railroad specialties continues to be erratic. Recent increase in pig iron prices seems to have strengthened the cast iron scrap market.

•

PHILADELPHIA—Deliveries of scrap to consumers were slowed down for the second week due to the shortage of cars in this area. It is understood that the unloading of at least one shipload of scrap was held up last week for this reason. The easier position of heavy melting scrap in this market is causing no mill to be unwilling to take scrap at the quoted market. Most observers believe that the generally happier outlook of the mills on their scrap problem is due largely to psychological factors having little relationship to the actual tonnage of foreign scrap coming into this market. The cast market continues to be even tighter than the steel scrap market. Pipe foundries are getting very little scrap from the Philadelphia area. Going railroad scrap prices are even higher than recent quotations. Bidders at former going prices are getting little from current railroad lists. Low phos scrap is still very difficult to obtain, but some plate tonnages have been sold at a slightly lower price.

•

CLEVELAND—Demand continues to exceed supply by a wide margin, here and in the Valley, in a market that is harder to figure out than the strength of the Dixiecrats Nov. 2. Consumers are unable to buy anything vaguely resembling large tonnages at current prices, yet the market is not as strong at the big over-the-market prices, and probably the true price level lies somewhere in between. Mills by and large consider themselves in better shape at present than they were at this time last year, but it looks like a tough winter.

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DETROIT—The Detroit scrap market is unchanged this week with prices holding at current levels for openhearth and other grades. Some sources report indications of a slight weakness in cast grades and the market for cast iron remains spotty and uncertain. The price is unchanged. Reports of sales at over current price levels continue and increasing pressure is indicated by the growing interest in conversion steel production. A prominent Detroit steel foundry this week ended its regular steel casting output and henceforth, it will produce ingots only for the steel-starved auto industry.

•

CINCINNATI—No abatement in market strength is anticipated here. Fundamentally the market is very strong, particularly openhearth material. Foundry grades are continuing to show weakness, with foundries pretty well filled up for the present. According to reports, a consumer of foundry grades got in a car of No 1 cast last week only to find the bottom of the car filled with pig iron and only topped with cast. Brokers are taking the position that higher prices are on the way and are reluctant to be long on the market.

•

NEW YORK—The scrap picture retains the same hue in this area that it has for the past month or more. Some quarters feel that supply is a little tight but the volume is generally good and shipments are moving as well as ever although some of the western mills are tapering off on their receipts since their backlog is the best they've had in months and they are looking forward to German scrap coming in as planned. There are no changes in prices. Shipments of clean cast chemical borings are moving along, well enough to take care of demand, although the supply for chemical purposes is a little tight because a considerable portion of this grade is being diverted for openhearth and blast furnace purposes.

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BUFFALO—Recent heavy shipments of foreign and domestic scrap from New York to a leading consumer failed to weaken the local market in the last week. Dealers and mills appeared just as far apart as ever on prices. It was generally agreed that so long as scrap from nearby points can be shipped on a spring board to Pittsburgh and Youngstown the deadlock will continue. Contemplated shutdown for relining late this week of a steel mill blast furnace was not expected to change the situation in scrap.

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BIRMINGHAM—The scrap market in this area is without any noticeable trend either from the standpoint of prices or demand. A scramble continues for cast and openhearth grades remain in fairly good supply. Little agricultural scrap is being brought to dealers' yards but the end of harvesting is expected to boost receipts from that source. A state agricultural committee has appealed to Alabama farmers to turn in all scrap available. This committee points out that steel production is not sufficient to meet the requirements of farms, homes and industry.

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BOSTON—For the second successive week, there was no change in the market here. Except for chemical borings which still sell for the high price of $38 to $39, the market has become quiet and spotty as compared to the activity of a few weeks ago. No. 1 heavy melting continues to sell at current prices of $34.40 up to $36.40 and other scrap prices remain at market levels. Cast is likewise spotty.

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SAN FRANCISCO—Luria Bros. of Philadelphia have announced their intention of opening a San Francisco office as scrap brokers, and Stanley Closter, representing the firm, has been making contacts these past weeks.

Going prices as obtained in the trade by THE IRON AGE, based on representative tonnages.

PITTSBURGH

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to $43.00
RR. hvy. melting	43.50 to 44.00
No. 2 hvy. melting	42.50 to 43.00
RR. scrap rails	58.00 to 59.00
Rails 2 ft and under	62.00 to 62.50
No. 1 comp'd bundles	42.50 to 43.00
Hand bdld. new slts.	42.50 to 43.00
Hvy. axle turn.	45.50 to 46.50
Hvy. steel forge turn.	45.50 to 46.50
Mach. shop turn.	37.50 to 38.00
Shoveling turn.	39.50 to 40.00
Mixed bor. and turn.	37.50 to 38.00
Cast iron borings	39.50 to 40.00
No. 1 mach. cast	69.50 to 70.50
Mixed yard cast	63.25 to 64.25
Hvy. breakable cast.	60.50 to 61.50
Malleable	76.00 to 77.00
RR. knuck. and cup.	59.50 to 60.00
RR. coil springs	59.50 to 60.00
RR. leaf springs	59.50 to 60.00
Rolled steel wheels	59.50 to 60.00
Low phos.	49.00 to 50.00

CHICAGO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$41.50 to $42.00
No. 2 hvy. melting	41.50 to 42.00
No. 1 bundles	41.50 to 42.00
No. 2 dealers' bundles	41.50 to 42.00
Bundled mach. shop turn.	39.50 to 40.00
Galv. bundles	39.50 to 40.00
Mach. shop turn.	36.50 to 37.00
Short shov. turn.	38.50 to 39.00
Cast iron borings	37.50 to 38.00
Mix. borings and turn.	36.50 to 37.00
Low phos. hvy. forge	51.00 to 52.00
Low phos. plates	49.00 to 50.00
No. 1 RR. hvy. melt.	44.25 to 48.50
Rerolling rails	66.00 to 68.00
Miscellaneous rails	61.00 to 62.00
Angles & splice bars	56.00 to 56.50
Locomotive tires, cut	58.00 to 59.00
Cut bolster & side frames	51.00 to 52.00
Standard stl. car axles	77.00 to 78.00
No. 3 steel wheels	53.00 to 55.00
Couplers and knuckles	55.00 to 56.00
Rails, 2 ft and under	60.00 to 63.00
Malleable	82.00 to 83.00
No. 1 mach. cast.	69.00 to 70.00
No. 1 agricul. cast.	63.00 to 65.00
Heavy breakable cast.	62.00 to 63.00
RR. grate bars	62.00 to 64.00
Cast iron brake shoes	58.00 to 60.00
Cast iron car wheels	62.00 to 63.00

CINCINNATI

Per gross ton, f.o.b. cars:

No. 1 hvy. melting	$40.00 to $41.00
No. 2 hvy. melting	40.00 to 41.00
No. 1 bundles	40.00 to 41.00
No. 2 bundles	40.00 to 41.00
Mach. shop turn.	35.00 to 36.00
Shoveling turn.	37.00 to 38.00
Cast iron borings	36.00 to 37.00
Mixed bor. & turn.	35.00 to 36.00
Low phos., 18 in. under	48.00 to 49.00
No. 1 cupola cast.	65.00 to 66.00
Hvy breakable cast	59.00 to 60.00
Rails 18 in. and under	61.00 to 63.00
Rails random length	56.00 to 57.00
Drop broken	69.00 to 70.00

BOSTON

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$34.40 to $36.40
No. 2 hvy. melting	34.40
Nos. 1 and 2 bundles	34.40
Bushelings	34.40
Shoveling turn.	31.40
Machine shop turn.	29.40
Mixed bor. and turn.	29.40
Cl'n cast chem. bor.	38.00 to 39.00
No. 1 machinery cast.	64.00 to 65.00
No. 2 machinery cast.	59.00 to 60.00
Heavy breakable cast.	53.50 to 54.50
Stove plate	52.50 to 53.50

DETROIT

Per gross ton, brokers' buying prices f.o.b. cars:

No. 1 hvy. melting	$38.00
No. 2 hvy. melting	38.00
No. 1 bundles	38.00
New busheling	38.00
Flashings	38.00
Mach. shop turn.	$32.50 to 33.00
Machinery cast	63.00 to 65.00
Mixed yard cast	57.00 to 58.00
Shoveling turn.	34.50 to 35.00
Cast iron borings	33.50 to 34.00
Mixed bor. & turn.	34.50 to 35.00
Low phos. plate	42.50 to 43.00
Heavy breakable cast.	53.00 to 57.00
Stove plate	57.00 to 58.00
Automotive cast.	64.00 to 66.00

PHILADELPHIA

Per gross ton delivered to consumer:

No. 1 hvy. melting	$44.50 to $45.50
No. 2 hvy. melting	41.00 to 41.50
No. 1 bundles	44.50 to 45.50
No. 2 bundles	41.00 to 41.50
Mach. shop turn.	37.00 to 38.00
Shoveling turn.	38.50 to 39.00
Mixed bor. and turn.	36.50 to 37.50
Clean cast chemical bor.	43.00 to 45.00
No. 1 machinery cast.	65.00 to 66.00
No. 1 mixed yard cast.	61.00 to 62.00
Hvy. breakable cast.	62.00 to 63.00
Clean auto cast.	65.00 to 66.00
Hvy. axle forge turn.	46.00 to 47.00
Low phos. plate	50.00 to 51.00
Low phos. punchings	51.00 to 52.00
Low phos. bundles	48.00 to 49.00
RR. steel wheels	54.00 to 55.00
RR. coil springs	54.00 to 55.00
RR. malleable	78.00 to 80.00
Cast iron carwheels	68.00 to 70.00

ST. LOUIS

Per gross ton delivered to consumer:

No. 1 hvy. melting	$43.00 to $44.00
No. 2 hvy. melting	40.00 to 41.00
Bundled sheets	40.00 to 41.00
Mach. shop turn.	35.00 to 36.00
Shoveling turnings	37.00 to 38.00
Locomotive tires, uncut	47.00 to 48.00
Mis. std. sec. rails	54.00 to 56.00
Steel angle bars	54.00 to 55.00
Rails 3 ft and under	58.00 to 60.00
RR. steel springs	49.00 to 50.00
Steel car axles	56.00 to 57.00
Brake shoes	59.00 to 60.00
Malleable	73.00 to 75.00
Cast iron car wheels	60.00 to 61.00
No. 1 machinery cast.	66.00 to 67.00
Hvy. breakable cast.	59.00 to 60.00

BIRMINGHAM

Per gross ton delivered to consumer:

No. 1 hvy. melting	$40.00
No. 2 hvy. melting	40.00
No. 2 bundles	40.00
No. 1 bunsheling	40.00
Long turnings	$32.00 to 33.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	29.50
Bar crops and plate	44.00 to 45.00
Structural and plate	44.00 to 45.00
No. 1 cupola cast.	67.00 to 68.00
Stove plate	64.00 to 65.00
No. 1 RR. hvy. melt.	41.00
Steel axles	51.00 to 52.00
Scrap rails	44.00 to 45.00
Rerolling rails	57.00 to 60.00
Angles & splice bars	51.00 to 53.00
Rails 3 ft & under	52.00 to 55.00
Cast iron carwheels	57.00 to 58.00

YOUNGSTOWN

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.50 to $43.00
No. 2 hvy. melting	42.50 to 43.00
Mach. shop turn.	37.50 to 38.00
Short shov. turn.	39.00 to 40.00
Cast iron borings	38.00 to 39.00
Low phos.	47.50 to 48.00

NEW YORK

Brokers' buying prices per gross ton, on cars:

No. 1 hvy. melting	$38.50 to $39.00
No. 2 hvy. melting	37.00
No. 2 bundles	37.00
Mach. shop turn.	31.50 to 32.00
Mixed bor. & turn.	31.50 to 32.00
Shoveling turnings	33.50 to 34.00
Machinery cast	59.00 to 60.00
Mixed yard cast	57.00 to 58.00
Heavy breakable cast.	56.00 to 57.00
Charging box cast.	56.00 to 57.00
Unstrp. motor blks.	53.50 to 54.50
Cl'n cast chem. bor.	38.50 to 39.50

BUFFALO

Per gross ton delivered to consumer:

No. 1 hvy. melting	$47.00 to $49.00
No. 2 hvy. melting	41.75 to 42.25
No. 1 bundles	41.75 to 42.25
No. 2 bundles	41.75 to 42.25
No. 1 busheling	41.75 to 42.25
Mach. shop turn.	36.75 to 37.25
Shoveling turn.	37.25 to 38.00
Cast iron borings	37.75 to 38.25
Mixed bor. and turn.	36.75 to 37.25
Clean auto. cast.	65.00 to 66.00
Mixed cupola cast.	65.00 to 66.00
Stove plate	64.00 to 65.00
RR. malleable	70.00 to 75.00
Small indus. malleable	47.00 to 49.00
Low phos. plate	48.00 to 50.00
Scrap rails	58.00 to 60.00
Rails 3 ft & under	63.00 to 64.00
RR steel wheels	58.00 to 60.00
RR. coil & leaf spgs.	58.00 to 60.00
RR. knuckles & coup.	58.00 to 60.00

CLEVELAND

Per gross ton delivered to consumer:

No. 1 hvy. melting	$42.00 to $42.50
No. 2 hvy. melting	42.00 to 42.50
No. 1 bundles	42.00 to 42.50
No. 1 busheling	42.00 to 42.50
Drop forge flashings	42.00 to 42.50
Mach. shop turn.	37.00 to 37.50
Shoveling turn.	38.50 to 39.50
Steel axle turn.	42.00 to 42.50
Cast iron borings	37.50 to 38.50
Mixed bor. & turn.	36.50 to 37.50
Low phos. 2 ft and under	47.00 to 47.50
No. 1 machinery cast.	72.00 to 74.50
Malleable	79.00 to 81.00
RR. cast.	76.00 to 77.00
Railroad grate bars	60.00 to 62.00
Stove plate	61.00 to 63.00
RR. hvy. melting	43.00 to 43.50
Rails 3 ft and under	63.50 to 64.50
Rails 18 in. and under	65.00 to 66.00

SAN FRANCISCO

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	$27.50
No. 2 hvy. melting	27.50
No. 2 bales	27.50
No. 3 bales	24.50
Mach. shop turn.	18.00
Elec. fur. 1 ft under	$40.00 to 42.00
No. 1 cupola cast.	58.00 to 60.00
RR. hvy. melting	28.50
Rails	29.00

LOS ANGELES

Per gross ton, f.o.b. shipping point:

No. 1 hvy. melting	$27.50
No. 2 hvy. melting	27.50
No. 1 bales	27.50
No. 2 bales	27.50
No. 3 bales	24.50
Mach. shop turn.	20.00
Elec. fur. 1 ft under	$40.00 to 42.00
No. 1 cupola cast	58.00 to 60.00
RR. hvy. melting	28.50

SEATTLE

Per gross ton delivered to consumer:

No. 1 & No. 2 hvy. melt.	$27.50 to $30.00
Elec. fur. 1 ft and under	40.00 to 42.00
No. 1 cupola cast.	50.00 to 54.00
RR. hvy. melting	30.00 to 33.00

HAMILTON, ONT.

Per gross ton delivered to consumer: Cast grades f.o.b. shipping point:

Heavy melting	$23.00*
No. 1 bundles	23.00*
No. 2 bundles	22.50*
Mechanical bundles	21.00*
Mixed steel scrap	19.00*
Mixed borings and turnings	17.00*
Rails, remelting	23.00*
Rails, rerolling	26.00*
Bushelings	17.50*
Bushelings, new fact, prop'd	21.00*
Bushelings, new fact, unprop'd	16.00*
Short steel turnings	17.00*
No. 1 cast	$48.00 to 50.00*
No. 2 cast	44.00 to 45.00*

*Ceiling Price

Comparison of Prices . .

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	Oct. 19 1948	Oct. 12 1948	Sept. 21, 1948	Oct. 21, 1947
Hot-rolled sheets	3.26	3.26	3.26	2.80
Cold-rolled sheets	4.00	4.00	4.00	3.55
Galvanized sheets (10 ga)	4.40	4.40	4.40	3.95
Hot-rolled strip	3.265	3.265	3.265	2.80
Cold-rolled strip	4.063	4.063	4.063	3.55
Plates	3.42	3.42	3.42	2.95
Plates wrought iron	7.85	7.85	7.85	6.85
Stains C-R strip (No. 302)	33.00	33.00	33.25	30.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb) cokes	$6.80	$6.80	$6.80	$5.75
Tinplate, electro (0.50 lb)	6.00	6.00	6.00	5.05
Special coated mfg. ternes	5.90	5.90	5.90	4.90
Bars and Shapes: (cents per pound)				
Merchant bars	3.37	3.37	3.37	2.90
Cold-finished bars	3.995	3.995	3.995	3.55
Alloy bars	3.75	3.75	3.75	3.30
Structural shapes	3.25	3.25	3.25	2.80
Stainless bars (No. 302)	28.50	28.50	28.25	26.00
Wrought iron bars	9.50	9.50	9.50	7.15
Wire: (cents per pound)				
Bright wire	4.256	4.256	4.256	3.55
Rails: (dollars per 100 lb)				
Heavy rails	$3.20	$3.20	$3.20	$2.75
Light rails	3.55	3.55	3.55	3.10
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$52.00	$52.00	$52.00	$45.00†
Slabs, rerolling	52.00	52.00	52.00	45.00†
Forging billets	61.00	61.00	61.00	55.00†
Alloy blooms, billets, slabs	63.00	63.00	63.00	66.00†
Wire rod and Skelp: (cents per pound)				
Wire rods	3.619	3.619	3.619	2.80
Skelp	3.25	3.25	3.25	2.60

† Gross ton

Pig Iron (per gross ton)	Oct. 19 1948	Oct. 12 1948	Sept. 21, 1948	Oct. 21, 1947
No. 2, foundry, Phila.	$51.56	$51.56	$51.56	$41.36
No. 2, Valley furnace	46.50	46.50	43.50	36.50
No. 2, Southern Cin'ti	49.47	49.47	49.47	40.24
No. 2, Birmingham	43.38	43.38	43.38	34.88
No. 2, foundry, Chicago†	46.00	46.00	43.00	36.00
Basic del'd Philadelphia	50.76	50.76	50.76	40.86
Basic, Valley furnace	46.00	46.00	43.00	36.00
Malleable, Chicago†	46.50	46.50	43.50	36.50
Malleable, Valley	46.50	46.50	43.50	36.50
Charcoal, Chicago	73.78	73.78	69.55	56.04
Ferromanganese‡	161.71	161.71	145.00	145.00

† The switching charge for delivery to foundries in the Chicago district is $1 per ton.

‡ Average of U. S. prices quoted on Ferroalloy page.

Scrap (per gross ton)				
Heavy melt'g steel, P'gh.	$42.75	$42.75	$42.75	$42.25
Heavy melt'g steel, Phila.	45.00	45.00	45.00	41.50
Heavy melt'g steel, Ch'go	41.75	41.75	41.75	41.75
No. 1, hy. comp. sh't, Det.	38.00	38.00	38.00	37.25
Low phos. Young'n	47.75	47.75	47.75	46.25
No. 1, cast, Pittsburgh	70.00	70.00	70.00	45.50
No. 1, cast, Philadelphia	65.50	65.50	65.50	51.50
No. 1, cast, Chicago	69.50	69.50	71.00	52.50
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$15.00	$15.00	$15.00	$12.50
Foundry coke, prompt	17.00	17.00	17.00	14.00
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	23.50	23.50	23.50	21.50
Copper, Lake Conn.	23.625	23.625	23.625	21.625
Tin, Grade A, New York	$1.03	$1.03	$1.03	80.00
Zinc, East St. Louis	15.00	15.00	15.00	10.50
Lead, St. Louis	19.30	19.30	19.30	14.80
Aluminum, virgin	17.00	17.00	16.00	15.00
Nickel, electrolytic	42.90	42.90	42.90	37.67
Magnesium, ingot	20.50	20.50	20.50	20.50
Antimony, Laredo, Tex.	38.50	38.50	35.00	33.00

Composite Prices . .

Starting with the issue of Apr. 22, 1943, the weighted finished steel index was revised for the years 1941, 1942, and 1943. See explanation of the change on p. 90 of the Apr. 22, 1943, issue. Index revised to a quarterly basis as of Nov. 16, 1944; for details see p. 98 of that issue. The finished steel composite price for the current quarter is an estimate based on finished steel shipments for the previous quarter. This figure will be revised when shipments for this quarter are compiled.

	FINISHED STEEL (Base Price)	PIG IRON	SCRAP STEEL
Oct. 19, 1948	3.75255¢ per lb.	$46.82 per gross ton	$43.16 per gross ton
One week ago	3.75255¢ per lb.	$46.82 per gross ton	$43.16 per gross ton
One month ago	3.75255¢ per lb.	$45.07 per gross ton	$43.16 per gross ton
One year ago	3.19541¢ per lb.	$36.96 per gross ton	$41.83 per gross ton

	HIGH	LOW
1948	3.75325¢ July 27	3.22566¢ Jan. 1
1947	3.19541¢ Oct. 7	2.87118¢ Jan. 7
1946	2.83599¢ Dec. 31	2.54490¢ Jan 1
1945	2.44104¢ Oct. 2	2.38444¢ Jan. 2
1944	2.30837¢ Sept. 5	2.21189¢ Oct. 5
1943	2.29176¢	2.29176¢
1942	2.28249¢	2.28249¢
1941	2.43078¢	2.43078¢
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16
1939	2.35367¢ Jan. 3	2.26689¢ May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10
1935	2.07642¢ Oct. 1	2.06492¢ Jan. 8
1934	2.15367¢ Apr. 24	1.95757¢ Jan. 2
1933	1.95578¢ Oct. 3	1.75836¢ May 2
1932	1.89196¢ July 5	1.83901¢ Mar. 1
1931	1.99626¢ Jan. 13	1.86586¢ Dec. 29
1930	2.25488¢ Jan. 7	1.97319¢ Dec. 9
1929	2.31773¢ May 28	2.26498¢ Oct. 29

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing major portion of finished steel shipments. Index recapitulated in Aug. 28, 1941, issue.

	HIGH	LOW
1948	$46.82 Oct. 12	$39.58 Jan. 6
1947	37.98 Dec. 30	30.14 Jan. 7
1946	30.14 Dec. 10	25.37 Jan. 1
1945	25.37 Oct. 23	23.61 Jan. 2
1944	$23.61	$23.61
1943	23.61	23.61
1942	23.61	23.61
1941	$23.61 Mar. 20	$23.45 Jan. 2
1940	23.45 Dec. 23	22.61 Jan. 2
1939	22.61 Sept. 19	20.61 Sept. 12
1938	23.25 June 21	1961 July 6
1937	23.25 Mar. 9	20.25 Feb. 16
1936	19.74 Nov. 24	18.73 Aug. 11
1935	18.84 Nov. 5	17.83 May 14
1934	17.90 May 1	16.90 Jan. 27
1933	16.90 Dec. 5	13.56 Jan. 3
1932	14.81 Jan. 5	13.56 Dec. 6
1931	15.90 Jan. 6	14.79 Dec. 15
1930	18.21 Jan. 7	15.90 Dec. 16
1929	18.71 May 14	18.21 Dec. 17

Based on averages for basic iron at valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	HIGH	LOW
1948	$43.16 July 27	$39.75 Mar. 9
1947	42.58 Oct. 28	29.50 May 20
1946	31.17 Dec. 24	19.17 Jan. 1
1945	19.17 Jan. 2	18.92 May 22
1944	19.17 Jan. 11	15.76 Oct. 24
1943	$19.17	$19.17
1942	19.17	19.17
1941	$22.00 Jan. 7	$19.17 Apr. 10
1940	21.83 Dec. 30	16.04 Apr. 9
1939	22.50 Oct. 3	14.08 May 16
1938	15.00 Nov. 22	11.00 June 7
1937	21.92 Mar. 30	12.67 June 9
1936	17.75 Dec. 21	12.67 June 8
1935	13.42 Dec. 10	10.33 Apr. 29
1934	13.00 Mar. 13	9.50 Sept. 25
1933	12.25 Aug. 8	6.75 Jan. 3
1932	8.50 Jan. 12	6.43 July 5
1931	11.33 Jan. 6	8.50 Dec. 29
1930	15.00 Feb. 18	11.25 Dec. 9
1929	17.58 Jan. 29	14.08 Dec. 8

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Iron and Steel Prices . . .

Steel prices shown here are f.o.b. producing points in cents per pound unless otherwise indicated. Extras apply. (1) Commercial quality sheet grade; prices, 0.25¢ above base. (2) Commercial quality grade. (3) Widths up to 12-in. inclusive. (4) 0.25 carbon and less. (5) Cokes, 1.25 lb, deduct 20¢ per base box. (6) 18 gage and heavier. (7) For straight length material only from producers to fabricators. (8) Also shafting. For quantities of 40,000 lb and over. (9) Carload lot in manufacturing trade. (10) Hollowware enameling, gages 29 to 31 only. (11) Produced to dimensional tolerances in AISI Manual Sec. 6. (12) Slab prices subject to negotiation in most cases. (13) San Francisco only. (14) Los Angeles only. (15) San Francisco and Los Angeles only. (16) Seattle only. (17) Seattle and Los Angeles only.

PRODUCTS	Base prices at producing points apply to the sizes and grades produced in these areas														
	Pittsburgh	Chicago	Gary	Cleveland	Birmingham	Buffalo	Youngstown	Sparrows Point	Granite City	Middletown, Ohio		Detroit	Johnstown	Seattle, S. Fr'isco, LosAngeles	Fontana
INGOTS Carbon forging	$50.00														
Alloy	$51.00						(per net ton)								
BILLETS, BLOOMS, SLABS Carbon, rerolling[12]	$52.00				$52.00	$52.00	(per net ton)						$52.00		
Carbon forging billets	$61.00	$61.00	$61.00	$61.00	$61.00	$61.00	(per net ton)						$61.00		
Alloy	$63.00	$63.00				$63.00	(Bethlehem, Canton, Massillon = $63.00) (per net ton)								
PIPE SKELP	3.25						3.25				Warren =3.25				
WIRE RODS	3.40 to 4.15	3.40 to 3.90		3.40	3.40		3.65	3.50			Worcester 3.70		3.40	4.05[13] 4.10[14]	
SHEETS Hot-rolled[6]	3.25 to 3.30	3.25	3.25	3.25–3.30	3.25	3.25	3.25	3.25		Warren, Ashland =3.25		3.45		3.95[15]	5.85
Cold-rolled[1]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.20	4.00	Warren 4.00	4.20		Pittsburg, Cal. 4.95	
Galvanized (10 gage)	4.40	4.40	4.40		4.40			4.40	Canton =4.40	4.40	Ashland =4.40			5.15[15]	
Enameling (12 gage)	4.40	4.40	4.40	4.40			4.40		4.60	4.40		4.70			
Long ternes[2] (10 gage)	4.80		4.80							4.80					
STRIP Hot-rolled[3]	3.25 to 3.30	3.25 to 3.30	3.25	3.25 to 3.30	3.25	3.25	3.25	3.25		3.25	Warren =3.25	3.45		4.00 to 4.25	5.90
Cold-rolled[4]	4.00	4.25		4.00	4.00	4.00	4.00	4.00		New Haven 4.50 Warren =4.00 to 4.25		4.20 to 4.50			7.10
TINPLATE Cokes, 1.50 lb.[5] base box	$6.80	$6.80	$6.80		$6.90			$6.90	$7.00	Warren, Ohio =$6.80				Pittsburg, Cal. =$7.55	
Electrolytic 0.25, 0.50, 0.75 lb. box	Deduct $1.00, 80¢ and 60¢ respectively from 1.50 lb. coke base box price														
TERNES MFG., special coated	Deduct 90¢ from 1.50 lb. coke base box price														
BLACKPLATE CANMAKING 55 70 lb, 75 95 lb, 100 128 lb	Deduct $1.60, $1.70 and $1.60 respectively from 1.50 lb. coke base box price														
BLACKPLATE, h.o., 29 ga.[10]	4.75	4.75	4.75					4.85							
BARS Carbon Steel	3.35 to 3.55	3.35	3.35	3.35	3.35	3.35	3.35	3.35		3.35	Canton =3.35	3.55	3.35	4.05 to 4.10	5.30
Reinforcing (billet)[7]	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35			Canton =3.35		3.35	4.05 to 4.10	5.30
Cold-finished[8]	3.95 to 4.00	4.00	4.00	4.00		4.00	4.00					4.30			
Alloy, hot-rolled	3.75	3.75	3.75			3.75	3.75	Bethlehem, Canton, Massillon =3.75				4.05	3.75	4.80[14]	5.50
Alloy cold-drawn	4.65 to 4.75	4.65	4.65	4.65		4.65	4.65	Massillon =4.65			Worcester 4.95				
PLATE Carbon steel[11]	3.40 to 3.60	3.40	3.40	3.40 to 3.60	3.40	3.45	3.40	Coatesville =3.75, Claymont =3.95 Geneva, Utah =3.40, Harrisburg =6.50				3.65	3.45	4.30[16]	5.80
Floor plates	4.55	4.55		4.55	Consh	ohocken	=3.95	Conshohocken =4.55							
Alloy	4.40	4.40							Coatesville =5.10						
SHAPES, Structural	3.25 to 3.30	3.25	3.25		3.25	3.30	Bethlehem =3.30, Geneva, Utah =3.25						3.30	3.85 to 4.30	5.75
MANUFACTURERS' WIRE[9] Bright	4.15 to 4.50	4.15 to 4.65		4.15	4.15		4.15	4.25	Duluth =4.15, Worcester =4.45				4.15	5.15[13]	
Spring (high carbon)	5.20	5.20		5.20				5.30	Worcester =5.50 New Haven, Trenton =5.50				5.20	Duluth = 5.20-6.15	
PILING, Steel sheet	4.05	4.05				4.05									

STAINLESS STEELS

Base prices, in cents per pound, f.o.b. producing point

Product	Chromium Nickel						Straight Chromium		
	301	302	303	304	316	347	410	416	430
Ingots, rerolling	12.75	13.50	15.00	14.50	22.75	20.00	11.25	13.75	11.50
Slabs, billets, rerolling	17.00	18.25	20.25	19.25	30.25	26.75	15.00	18.50	15.25
Forging discs, die blocks, rings	30.50	30.50	33.00	32.00	49.00	41.00	24.50	25.00	25.00
Billets, forging	24.25-26.50	24.25-26.50	26.25-28.75	25.50-27.75	39.00-42.75	32.75-35.75	19.50-21.50	20.00-21.75	20.00-21.75
Bars, wire, structurals	28.50	28.50	31.00	30.00	46.00	38.50	23.00	23.50	23.50
Plates	32.00	32.00	34.00	34.00	50.50	44.00	26.00	26.50	26.50
Sheets	37.50-40.75	37.50-40.75	39.50-43.00	39.50-43.00	53.00-57.25	50.00-54.00	33.00	33.50	35.50 .....
Strip, hot-rolled	24.25	25.75	30.00	27.75	46.00	38.75	21.25	28.00	21.75
Strip, cold-rolled	30.50-30.75	33.00-33.50	36.50-39.50	35.00-35.75	55.00-57.25	48.50-50.00	27.00	33.50	27.50 .....

ELECTRODES

Cents per lb, f.o.b. plant, threaded electrodes with nipples, unboxed

Diameter in in.	Length in in.	
Graphite		
17, 18, 20	60, 72	16.00¢
8 to 16	48, 60, 72	16.50¢
7	48, 60	17.75¢
6	48, 60	19.00¢
4, 5	40	19.50¢
3	40	20.50¢
2½	24, 30	21.00¢
2	24, 30	23.00¢
Carbon		
40	100, 110	7.50¢
35	65, 110	7.50¢
30	65, 84, 110	7.50¢
24	72 to 104	7.50¢
17 to 20	84, 90	7.50¢
14	60, 72	8.00¢
10, 12	60	8.25¢
8	60	8.50¢

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	90.5¢
18	4	1	—	5	$1.42
18	4	2	—	—	$1.025
1.5	4	1.5	8	—	65¢
6	4	2	6	—	69.5¢

High-carbon-chromium ..... 52¢
Oil harden manganese ..... 29¢
Special carbon ..... 26.5¢
Extra carbon ..... 22¢
Regular carbon ..... 19¢

Warehouse prices on and east of Mississippi are 2½¢ per lb higher. West of Mississippi, 4½¢ higher.

ELECTRICAL SHEETS

Base, HR cut lengths, f.o.b. mill

	Cents per lb
Armature	5.45
Electrical	5.95
Motor	6.70 to 9.20
Dynamo	7.50 to 10.00
Transformer 72	8.05 to 11.80
Transformer 65	8.60 to 12.35
Transformer 58	9.30 to 13.05
Transformer 52	10.10

RAILS, TRACK SUPPLIES

F.o.b. mill

Standard rails, 100 lb and heavier, No. 1 O.H., per 100 lb $3.20
Joint bars, 100 lb 4.25
Light rails (from billets) per 100 lb 3.55

	Base Price cents per lb
Track spikes	5.35
Axles	5.20
Screw spikes	8.00
Tie plates	4.05
Tie plates, Pittsburg, Calif.*	4.20
Track bolts, untreated	8.25
Track bolts, heat treated, to railroads	8.50

*Seattle, add 30¢.

C-R SPRING STEEL

Base per pound f.o.b. mill

0.26 to 0.40 carbon ..... 4.00¢
0.41 to 0.60 carbon ..... 5.50¢
0.61 to 0.80 carbon ..... 6.10¢
0.81 to 1.05 carbon ..... 8.05¢
1.06 to 1.35 carbon ..... 10.35¢
Worcester, add 0.30¢.

CLAD STEEL

Base prices, cents per pound

Stainless clad	Plate	Sheet
No. 304, 20 pct, f.o.b.		
Coatesville, Pa.	*27.00	
Washington, Pa.	*26.50	*22.50
Claymont, Del.	*26.50	
Conshohocken, Pa.		*22.50
Nickel-clad		
10 pct f.o.b. Coatesville, Pa.	27.50	
Inconel-clad		
10 pct, f.o.b. Coatesville.	36.00	
Monel-clad		
10 pct, f.o.b. Coatesville.	29.00	
Alumnized steel sheets		
Hot dip, 20 gage, f.o.b. Butler, Pa.	....	9.25

* Includes annealing and pickling, or sandblasting.

MERCHANT WIRE PRODUCTS

To the dealer, f.o.b. mill

	Base per 100 lb	Pittsburg, Calif.
Standard & coated nails*	103	123
Galvanized nails*	103	123
Woven wire fence†	109	132
Fence posts, carloads††	114	
Single loop bale ties	106	130
Galvanized barbed wire**	123	143
Twisted barbless wire	123	....

* Pgh., Chi., Duluth; Worcester, 6 columns higher. † 15½ gage and heavier. ** On 80 rod spools, in carloads. †† Duluth only.

	Base per 100 lb	Pittsburg, Calif.
Annealed fence wire‡	$4.80	$5.75
Annealed, galv. fencing‡	5.25	6.20
Cut nails, carloads‡‡	6.75	....

‡ Add 30¢ at Worcester; 10¢ at Sparrows Pt.
‡‡ Less 20¢ to jobbers.

HIGH STRENGTH, LOW ALLOY STEELS

Mill base prices, cents per pound

Steel	Aldecor	Corten	Double Strength No. 1	Dynalloy	HI Steel	Mayari R	Otiscoloy	Yoloy	NAX High Tensile
Producer	Republic	Carnegie-Illinois, Republic	Republic	Alan Wood	Inland	Bethlehem	Jones & Laughlin	Youngstown Sheet & Tube	Great Lakes Steel
Plates	5.20	5.20	5.20	5.30	5.20	5.30	5.20	5.20	5.65
Sheets									
Hot-rolled	4.95	4.95	4.95	5.25	4.95	4.95	4.95	4.95	5.25
Cold-rolled	6.05	6.05	6.05	....	6.05	6.05	6.05	6.05	6.35
Galvanized	....	6.75	....	....	....	6.75	....	....	....
Strip									
Hot-rolled	4.95	4.95	4.95	....	4.95	4.95	4.95	4.95	5.25
Cold-rolled	....	....	6.05	....	....	6.05	6.05	....	6.35
Shapes	....	4.95	....	....	4.95	5.05	4.95	....	....
Beams	....	4.95	....	....	....	....	....	....	....
Bars									
Hot-rolled	5.10	5.10	5.10	....	5.10	5.10	5.10	....	5.40
Bar shapes	....	5.10	....	....	5.10	5.10	5.10	....	....

PIPE AND TUBING

Base discounts, f.o.b. mills, steel buttweld and seamless. Base price, $200.00 per net ton.

Standard, threaded and coupled

Steel, buttweld*	Black	Galv.
⅜-in.	46	26½
1-in.	48½	29½
1¼-in.	49	30
1½-in.	49½	30½
2-in.	50	31
2½ and 3-in.	50½	31½
Wrought Iron, buttweld		
⅛-in.	+20½	+50
¼-in.	+10½	+39
1 and 1¼-in.	+ 4½	+30
2-in.	— 1½	+26½
2-in.	— 2	+26
Steel, lapweld		
2-in.	39½	20
2½ and 3-in.	43½	24
3½ to 6-in.	45½	26
Steel, seamless		
2-in.	38½	19
2½ and 3-in.	41½	22
3½ to 6-in.	43½	24
Wrought Iron, lapweld		
2-in.	+ 7½	+34
2½ to 3½-in.	+ 5	+29½
4-in.	list	+23½
4½ to 8-in.	+ 2	+25

Extra Strong, plain ends

Steel, buttweld		
⅛-in.	41	22
¼-in.	45	26
1-in.	47	29
1¼-in.	47½	29½
1½-in.	48	30
2-in.	48½	30½
2½ and 3-in.	49	31
Wrought Iron, buttweld		
⅛-in.	+16	+44
¼-in.	+ 9½	+37
1 to 2-in.	— 1½	+26
Steel, lapweld		
2-in.	38½	20
2½ and 3-in.	43½	25
3½ to 6-in.	45½	26
Steel, seamless		
2-in.	37½	19
2½ and 3-in.	41½	23
3½ and 6-in.	45	26½
Wrought Iron, lapweld		
2-in.	+ 4½	+30½
2½ to 4-in.	— 5	+19
4½ to 6-in.	— 1	+23½

Basing discounts for standard pipe are for threads and couplings. For threads only, buttweld, lapweld and seamless pipe, one point higher discount (lower price) applies. For plain ends, buttweld, lapweld and seamless pipe 3-in. and smaller, three points higher discount (lower price) applies, while for lapweld and seamless 3½-in. and larger four points higher discount (lower price) applies. F.o.b. Gary prices are one point lower discount on all buttweld. On buttweld and lapweld steel pipe, jobbers are granted a discount of 5 pct. On l.c.l. shipments, prices are determined by adding 25 pct and 30 pct and the carload freight rate to the base card.

*F.o.b. Fontana prices average 17 points lower discount (higher price) on black, 14 points on galvanized.

BOILER TUBES

Seamless steel and electric welded commercial boiler tubes and locomotive tubes, minimum wall. Prices per 100 ft at mill in carload lots, cut length 4 to 24 ft inclusive.

OD in.	Gage BWG	Seamless H.R.	Seamless C.R.	Electric Weld H.R.	Electric Weld C.D.
2	13	19.18	22.56	18.60	21.89
2½	12	25.79	30.33	25.02	29.41
3	12	28.68	33.76	27.82	32.74
3½	11	35.85	42.20	34.78	40.94
4	10	44.51	52.35	43.17	50.78

CAST IRON WATER PIPE

Per net ton

6 to 24-in., del'd Chicago	$106.70
6 to 24-in., del'd N. Y.	103.50 to 108.40
6 to 24-in., Birmingham	93.50
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipment; rail and water shipment less	120.30

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

BOLTS, NUTS, RIVETS, SET SCREWS

Consumer Prices

(Bolts and nuts f.o.b. mill Pittsburgh, Cleveland, Birmingham or Chicago)

Base discount less case lots

Machine and Carriage Bolts

	Pct Off List
½ in. & smaller x 6 in. & shorter	35
9/16 & ⅝ in. x 6 in. & shorter	37
¾ in. & larger x 6 in. & shorter	34
All diam, longer than 6 in.	30
Lag, all diam over 6 in. longer	35
Lag, all diam x 6 in. & shorter	37
Plow bolts	47

Nuts, Cold Punched or Hot Pressed

(Hexagon or Square)

½ in. and smaller	35
9/16 to 1 in. inclusive	34
1⅛ to 1½ in. inclusive	32
1⅝ in. and larger	27

On above bolts and nuts, excepting plow bolts, additional allowance of 15 pct for full container quantities. There is an additional 5 pct allowance for carload shipments.

Semifin. Hexagon Nuts

	USS	SAE
7/16 in. and smaller	..	41
½ in. and smaller	38	..
½ in. through 1 in.	..	39
9/16 in. through 1 in.	37	..
1⅛ in. through 1½ in.	35	37
1⅝ in. and larger	28	..

In full case lots, 15 pct additional discount.

Stove Bolts

Packages, nuts separate	$61.75
In bulk	70.00

Large Rivets

(½ in. and larger)

	Base per 100 lb
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	$6.75
F.o.b. Lebanon, Pa.	6.75

Small Rivets

(7/16 in. and smaller)

	Pct Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	48

Cap and Set Screws

(In packages)	Pct Off List
Hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in., SAE 1020, bright	46
¾ to 1 in. x 6 in., SAE (1035), heat treated	35
Set screws, oval points	
Milled studs	19
Flat head cap screws, listed sizes	5
Fillister head cap, listed sizes	28

FLUORSPAR

Washed gravel fluorspar, f.o.b. cars, Rosiclare, Ill.

Effective CaF, Content:	Base price per net ton
70% or more	$37.00
60% or less	34.00

LAKE SUPERIOR ORES

(51.50% Fe, Natural Content, Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer	$6.60
Old range, nonbessemer	6.45
Mesabi, bessemer	6.35
Mesabi, nonbessemer	6.20
High phosphorus	6.20

Increases or decreases in freight rates, dock handling charges and taxes after Apr. 1, 1948, are to be added to above prices.

METAL POWDER

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.i.f. New York, ocean bags	7.9¢ to 9.0¢
Domestic sponge iron, 98+% Fe, carload lots	9.0¢ to 15.0¢
Electrolytic iron, annealed, 99.5+% Fe	19.5¢ to 39.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	48.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 microns, 98%, 99.8%+ Fe	90.0¢ to $1.75
Aluminum	30.00¢
Antimony	51.17¢
Brass, 10 ton lots	27.25 to 37.25¢
Copper, electrolytic	33.625¢
Copper, reduced	34.25¢
Cadmium	$2.55
Chromium, electrolytic, 99% min.	$3.50
Lead	25.80¢
Manganese	55.00¢
Molybdenum, 99%	$2.65
Nickel, unannealed	66.00¢
Nickel, spherical, minus 30 mesh, unannealed	68.00¢
Silicon	34.00¢
Solder powder	8.5¢ plus metal cost
Stainless steel, 302	75.0¢
Tin	$1.155
Tungsten, 95%, 99%	$2.90
Zinc, 10 ton lots	17.25 to 30.00¢

COKE

	Net Ton
Furnace, beehive (f.o.b. oven) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b. oven) Connellsville, Pa.	$16.00 to $18.00
Foundry, Byproduct	
Buffalo	$22.65
Chicago, del'd	23.90
Chicago, f.o.b.	20.85
Detroit, f.o.b.	19.40
New England, del'd	22.75
Seaboard, N. J., f.o.b.	21.50
Philadelphia, f.o.b.	20.55
Swedeland, Pa., f.o.b.	20.50
Painesville, Ohio, f.o.b.	20.90
Erie, del'd	19.95
Cleveland, del'd	22.45
Cincinnati, del'd	21.40
St. Louis, del'd	20.98
Birmingham, del'd	18.66

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick *Carloads, Per 1000*	
First quality, Pa., Md., Ky., Mo. (except Salina, Pa., add $5)	$80.00
No. 1 Ohio	74.00
Sec. quality, Pa., Md., Ky., Mo.	74.00
No. 2 Ohio	66.00
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	11.50
Silica Brick	
Mt. Union, Pa., Ensley, Ala.	$80.00
Childs, Pa.	84.00
Hays, Pa.	85.00
Chicago District	89.00
Western, Utah and Calif.	95.00
Super Duty, Hays, Pa., Athens, Tex.	85.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	$13.75 to 14.00
Silica cement, net ton, bulk, Hays, Pa.	16.00
Silica cement, net ton, bulk, Ensley, Ala.	15.00
Silica cement, net ton, bulk, Chicago District	14.75
Silica cement, net ton, bulk, Utah and Calif.	21.00
Chrome Brick *Per Net Ton*	
Standard chemically bonded, Balt., Chester	$69.00
Magnesite Brick	
Standard, Balt. and Chester	$91.00
Chemically bonded, Balt. and Chester	80.00
Grain Magnesite *Std. ⅜-in. grains*	
Domestic, f.o.b. Balt. and Chester, in bulk, fines removed	$56.50
Domestic, f.o.b. Chewelah, Wash., in bulk with fines	$30.50 to 31.00
in sacks with fines	35.00 to 35.50
Dead Burned Dolomite	
F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk. Midwest, add 10¢; Missouri Valley, add 20¢	$12.25

WAREHOUSE PRICES

Base prices, f.o.b. warehouse, per 100 lb.
(Metropolitan area delivery, add 15¢ to base, except New York, add 30¢)

CITIES	SHEETS			STRIP		PLATES	SHAPES	BARS		ALLOY BARS			
	Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural	Hot-Rolled	Cold-Finished	Hot-Rolled, A 4615 As-rolled	Hot-Rolled, A 4140-50 Ann.	Cold-Drawn, A 4615 As-rolled	Cold-Drawn, A 4140-50 Ann.
Philadelphia	$5.15-5.71	$6.31-6.67	$7.27-7.47	$5.35-5.66	$6.51	$5.37-5.52	$5.09-5.24	$5.35-5.67	$6.16-6.31	$9.14	$9.29	$10.54	$10.69
New York	5.40-5.98	6.28-6.43	7.25-7.73	5.58-5.88	6.48-6.73	5.78	5 32-5.58	5.53-5.63	6.18-6.38	9.17-9.53	9.32-9.68	10.40-10.77	10.55-10.92
Boston	5.48-5.64	6.39	7.56-7.69	5.54-5.89	6.75-6.79	5.74	5.39-5.54	5.48-5.59	6.24-6.34	9.40-9.44	9.55-9.59	10.84-10.94	10.92-11.09
Baltimore	5.28	6.18	7.15-7.38	5.34	....	5.53	5.33-5.39	5.39	6.13	....	....	....	....
Chicago	4.85-5.10	5.75-5.95	6.95-7.05	4.85-5.30	6.15	5.10	4.90	4.90	5.70	9.00	9.15	10.40	10.55
Milwaukee	5.02-5.07	5.92	7.12-7.22	5.02-5.37	6.32	5.22-5.27	5.07	5.07	5.87	9.15-9.17	9.32	10.52-10.57	10.67-10.72
Norfolk	5.75	....	....	....	....	6.00	6.00	6.00	....	....	....	....	....
Cleveland	4.98-5.20	5.75[1]-6.04[1]	7.18-7.24	5.02-5.65	6.70	5.35-5.54	5.16-5.42	5.15-5.34	5.70-5.95	9.14-9.29	9.29-9.79	10.54	10.69
Buffalo	4.85-5.10	5.75-5.85	7.55-7.70	5.55-5.56	6.35	5.45-5.46	5.10	5.15-5.20	5.90-6.05	9.05-9.35	9.40-9.50	10.75	20.90
Detroit	5.20-5.55	6.05-6.50	7.45	5.25-5.70	6.25-6.55	5.50-5.55	5.30-5.37	5.30-5.62	6.02-6.07	9.31-9.55	9.20-9.47	10.72-10.95	10.87-11.10
Cincinnati	5.14-5.36[8]	5.82-6.21[8]	6.97-7.45	5.25-5.62[8]	6.31	5.50-5.71[8]	5.30-5.47[8]	5.30-5.62[8]	6.06-6.17[8]	9.31-9.35	9.50-9.51	10.75-10.76	10.90-10 91
St. Louis	5.19	6.04-6.09	7.29-7.39	5.19-5.79	6.49	5.39-5.44	5.24	5.24	6.04	9.34	9.49	10.74	10.89
Pittsburgh	4.85-4.90	5.75[1]	6.95-7.05	5.00-5.35	5.95	5.05-5.25	4.90-5.15	4.90-5.10	5.65-5.80	9.00	9.15	10.40	10.58-10.80
St. Paul	5.41	6.31	7.30-7.61	5.41	....	5.66	5.46	5.46	6.26	9.56	9.71	10.96	11.11
Omaha	5.92	....	9.18	5.92	....	6.17	5.97	5.97	6.77	....	....	....	....
Birmingham	5.05[11]	6.38	6.45	5.05[11]	6.38	5.25[11]	5.00[11]	5.00[11]	6.51	....	....	....	....
Houston	6.40	....	8.80	6.75	....	6.35	6.20	6.40	7.60	9.80	9.65	10.75	10.95
Los Angeles	6.30-6.40	7.85[1]-7.90	7.95-8 55	6.60-6.66	9.35[5]	5.95-6.10	5.75-5.90	6.05	7.85[15]-7.95	10.35[15]	10.20[15]	11.75[15]	11.95[15]
San Francisco	5.95[8]	7.15[2]	8 05-8.55[2]	6.75[5]	8.25	6.30-7.68[8]	5.90-6.90	5.90	7.55	10.35[15]	10.20[15]	11.75[15]	11.95[15]
Portland	6.50[4]	8.00[2]	8.15[2] 8 45[2]	6.85[4]	....	6.30[4]	6.25[4]	6.25[4]	8.25[4]	....	10.45[15]	....	12.05[15]
Seattle	6.20[4]-6.30[4]	7.75[2]-7.85[2]	7.65 8.00	6.55[4]-6.65[4]	....	6.20-6.30	6.15-6.25	6.05[4]-6.15[4]	8.00[14]-8.10[14]	....	10.30[15]-10.40[15]	....	12.00[15]-12.05[15]
Salt Lake City	6.15-8.00	7.35	7.90-9.06	7.10-7.45	....	5.75-6.65	6.65-7.00	6.95-7.25	7.55-8.40	....	....	....	....

BASE QUANTITIES

Standard unless otherwise keyed on prices.

HOT-ROLLED: Sheets, strip, plates, shapes and bars, 400 to 1999 lb.

COLD-ROLLED: Sheets, 400 to 1999 lb; strip, extras on all quantities bars 1000 lb and over.

ALLOY BARS: 1000 to 1999 lb.

GALVANIZED SHEETS: 450 to 1499 lb.

EXCEPTIONS: (1) 400 to 1499 lb; (2) 450 to 1499 lb; (3) 300 to 4999 lb; (4) 300 to 9999 lb; (5) 2000 lb and over; (6) 1000 lb and over; (7) 400 to 14,999 lb; (8) 400 lb and over; (9) 500 to 1999 lb; (10) 500 to 999 lb; (11) 400 to 3999 lb; (12) 450 to 3749 lb; (13) 400 to 1999 lb; (14) 1500 lb and over; (15) 1000 to 4999 lb; (16) 4000 lb and over; (17) up to 1999 lb.

PIG IRON PRICES

Dollars per gross ton. Delivered prices represent minimums. Delivered prices do not include 3 pct tax on freight.

PRODUCING POINT PRICES						DELIVERED PRICES† (BASE GRADES)						
Producing Point	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.	Consuming Point	Producing Point	Freight Rate	Basic	No. 2 Foundry	Malleable	Bessemer	Low Phos.
Bethlehem	48.00	.....	.....	.....	.....	Boston	Everett	$0.50 Arb.	....	48.75	49.25	.....	.....
Birmingham	42 88	43.38	.....	.....	.....	Boston	Steelton	6.27	54.27	54.77	55.27	55.77	60.27
Buffalo	47.00-48.00*	47.00-48.00*	47.50-48 50*	.....	.....	Brooklyn	Bethlehem	3.90	51.90	....	.....	.....	.....
Chicago	46.00	46.00	46.50	47.00	.....	Cincinnati	Birmingham	6.09	48 97	49.47	.....	.....	.....
Cleveland	46.00	46.50	46.50	47.00	51.00	Jersey City	Bethlehem	2.39	50 39	....	.....	.....	.....
Duluth	46.00	46.00	46.50	47.00	.....	Los Angeles	Provo	6.93	52.93	53.43	.....	.....	.....
Erie	45.50	46.00	46.50	47.00	.....	Mansfield	Cleveland-Toledo	3.03	49.03-48.53	49.53-49.03	49.53	50.03	54.03
Everett	....	48.75	49.25	.....	.....	Philadelphia	Bethlehem	2.21	50.21	....	.....	.....	.....
Granite City	47.90	48.40	48.90	.....	.....	Philadelphia	Swedeland	1.31	51.31	51.81	52.31	52.81	.....
Neville Island	46.00	46.50	46.50	.....	.....	Philadelphia	Steelton	2.81	50 81	51.31	51.81	52.31	56.81
Provo	46.00	46.50	....	.....	.....	San Francisco	Provo	6.93	52.93	53.43	.....	.....	.....
Sharpsville	46 00	46.50	46 50	47.00	.....	Seattle	Provo	6.93	52.93	53.43	.....	.....	.....
Steelton	46 00	46.50	49.00	49.50	54.00	St. Louis	Granite City	0.75 Arb.	48.65	49.15	49.65	.....	.....
Struthers, Ohio	46 00	....	....	....	.....								
Swedeland	50 00	50.50	51.00	51.50	.....								
Toledo	45.50	46.00	46.50	47.00	.....								
Troy, N. Y.	....	....	....	.....	54.00								
Youngstown	46.00	46.50	46.50	.....	.....								

* Republic Steel Corp. price: Basis: pig iron at Buffalo set by average price of No. 1 hvy. mlt. steel scrap at Buffalo as shown in last week's issue of THE IRON AGE. Price is effective until next Sunday midnight.

Producing point prices are subject to switching charges; silicon differential (not to exceed 50¢ per ton for each 0.25 pct silicon content in excess of base grade which is 1.75 to 2.25 pct); phosphorus differentials, a reduction of 38¢ per ton for phosphorus content of 0.70 pct and over; manganese differentials, a charge not to exceed 50¢ per ton for each 0.50 pct manganese content in excess of 1.00 pct. $2 per ton extra may be charged for 0.5 to 0.75 pct nickel content and $1 per ton extra for each additional 0.25 pct nickel.

Silvery iron (blast furnace) silicon 6.00 to 6.50 pct. C/L per g.t., f.o.b. Jackson, Ohio —$56.50; f.o.b. Buffalo $60.75. Add $1.25 per ton for each additional 0.50 pct Si. up to 12 pct. Add 50¢ per ton for each 0.50 pct Mn over 1.00 pct. Add $1.00 per ton for 0.75 pct or more P. Bessemer ferrosilicon prices are $1.00 per ton above silvery iron prices of comparable analysis.

Charcoal pig iron base price for low phosphorus $66.00 per gross ton, f.o.b. Lyles, Tenn. Delivered Chicago, $73.78. High phosphorus charcoal pig iron is not being produced.

Ferromanganese

78-82% Mn, Maximum contract base price, gross ton, lump size.

F.o.b. Birmingham $162
F.o.b. **Niagara Falls, Alloy, W. Va.,** Welland, Ont. $160
F.o.b. Johnstown, Pa. $162
F.o.b. Sheridan, Pa. $160
F.o.b. Rockwood, Tenn. $165
F.o.b. Etna, Pa. $163

$2.00 for each 1% above 82% Mn; penalty, $1.80 for each 1% below 78%.

Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk 10.0
Ton lots 11.6
Less ton lots 12.5

Spiegeleisen

Contract prices, gross ton, lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa..	$61.00	$62.00
Pgh. or Chicago	65.00	66.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.

96% min. Mn, 0.2% max. C, 1% max. Si, 2% max. Fe.

Carload, packed 35.5
Ton lots 37.0

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads 32
Ton lots 34
Less ton lots 36

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, delivered.

	Carloads	Ton	Less
0.07% max. C. 0.06% P, 90% Mn.	25.25	27.10	28.30
0.10% max. C	24.75	26.60	27.80
0.15% max. C	24.25	26.10	27.30
0.30% max. C	23.75	25.60	26.80
0.50% max. C	23.25	25.10	26.30
0.75% max. C, 7.00% max. Si	20.25	22.10	23.30

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5%, max. C.

Carload bulk 8.60
Ton lots 10.25
Briquet, contract basis, carlots, bulk delivered, per lb of briquet 10.0
Ton lots 11.6
Less ton lots 12.5

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct., f.o.b. Keokuk, Iowa, openhearth $81.00, foundry, $82.00; $81.75 f.o.b. Niagara Falls; Electric furnace silvery iron is not being produced at Jackson. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50 pct Mn over 1 pct.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe 20.70
97% Si, 1% Fe 21.10

Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 1 lb Si briquets.

Carload, bulk 5.90
Ton lots 7.50
Less ton lots 8.40

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump size, bulk, in carloads, delivered.

25% Si 17.50
50% Si 10.50
75% Si 13.00
85% Si 14.65
90-95% Si 16.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast Turnings		Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Ferrochrome (65-72% Cr, 2% max. Si)

Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads, delivered.

0.06% C 28.75
0.10% C 28.25
0.15% C 28.00
0.20% C 27.75
0.50% C 27.50
1.00% C 27.25
2.00% C 27.00
65-69% Cr, 4-9% C 20.50
62-66% Cr, 4-6% C, 6-9% Si 21.35

Briquets — Contract price, cents per pound of briquet, delivered, 60% chromium.

Carload, bulk 13.75
Ton lots 15.25
Less ton lots 16.15

High-Nitrogen Ferrochrome

Low-carbon type: **67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.**

S. M. Ferrochrome

Contract price, cents per pound chromium contained, lump size, delivered.

High carbon type: **60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.**

Carload 21.60
Ton lots 23.75
Less ton lots 25.25

Low carbon type: **62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.**

Carload 27.75
Ton lots 30.05
Less ton lots 31.85

Chromium Metal

Contract prices, cents per lb. chromium contained packed, delivered, ton lots. 97% min. Cr. 1% max. Fe.

0.20% max. C 1.09
0.50% max. C 1.05
9.00% min. C 1.04

Calcium—Silicon

Contract price per lb of alloy, lump, delivered.

30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads 17.90
Ton lots 21.00
Less ton lots 22.50

Calcium—Manganese—Silicon

Contract prices, cents per lb of alloy, lump, delivered.

16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads 19.25
Ton lots 21.55
Less ton lots 22.55

CMSZ

Contract price, cents per pound of alloy, delivered.

Alloy 4: **45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.**

Alloy 5: **50-56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.**

Ton lots 19.75
Less ton lots 21.00

V Foundry Alloys

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn. V-7: 28-32% Cr, 15-21% Si, 14-16% Mn.

Torf lots ..... 15.75¢
Less ton lots ..... 17.00¢

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 56%, Ti 9%, Ca 5%.

Ton lots and carload packed ..... 18.00¢
Less ton lots ..... 19.50¢

SMZ

Contract price, cents per pound of alloy, delivered. 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots 17.25
Less ton lots 18.50

Other Ferroalloys

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W, 5 ton lots, delivered $2.25

Ferrovanadium, 35-55%, contract basis, delivered, per pound, contained, V.

Openhearth $2.90
Crucible 3.00
High speed steel (Primos) 3.10

Vanadium pentoxide, 88-92% V_2O_5 contract basis, per pound Contained V_2O_5 ..... $1.20

Ferrocolumbium, 50-60% contract basis, delivered, per pound contained Cb.

Ton lots $2.75
Less ton lots $2.80

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo. ..... 95¢

Calcium molybdate, 45-50%, f.o.b. Langeloth, Washington, Pa., per pound contained Mo. ..... 80¢

Molybdenum oxide briquets, f.o.b. Langeloth and Washington, Pa., per pound contained Mo ..... 80¢

Molybdenum oxide in bags, f.o.b. Langeloth and Washington, Pa., per pound contained Mo ..... 80¢

Ferrotitanium, 40-45%, 0.10% C max., f.o.b. Niagara Falls, N. Y., ton lots, per pound contained Ti $1.23

Ferrotitanium, 20-25%, 0.10% C max., ton lots, per pound contained Ti $1.35
Less ton lots 1.40

High carbon ferrotitanium, 15-20%, 6-8% C, contract basis, f.o.b. Niagara Falls, freight allowed, carloads, per net ton $160.00

Ferrophosphorus, electrolytic, 23-26%, carlots, f.o.b. Sigio, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload 75.00

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.

Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per pound of alloy.

Carload, bulk ..... 6.60¢

Alsifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carload ..... 8.40¢
Ton lots ..... 9.30¢

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound

Carload, bulk 11.00
Ton lots, packed 11.75

Boron Agents

Contract prices per pound of alloy, delivered.

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. X D.

Ton lot $1.20

Manganese—Boron 75.00% Mn. **15-20%** B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. X D, delivered.

Ton lots $1.67
Less ton lots 1.79

Nickel—Boron 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.

Less ton lots $1.80

Silcaz, contract basis, delivered.

Ton lots ..... 45.00¢

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.

No. 1 ..... 93¢
No. 6 ..... 63¢
No. 79 ..... 45¢

Bortam, f.o.b. Niagara Falls

Ton lots, per pound ..... 45¢
Less ton lots, per pound .... 50¢

Carbortam, f.o.b. Suspension Bridge, N. Y., freight allowed, Ti 15-18%, B 1.00-1.50%, Si 2.5-3.0%, Al 1.0-2.0%.

Ton lots, per pound..... 8.625¢

Borosil, f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B $6.25

More Ruhr Coke Raises French Pig Iron Output

Nancy, France

• • • **More coke** from the Ruhr has been instrumental in increasing the production of basic Bessemer pig iron and malleable steel here during the past 2 months.

Despite these increases, open-hearth and electric furnace steel production showed a slight decrease, mainly because of vacations.

Including the Saar, pig iron output in August reached 718,000 metric tons, 725,000 tons of steel and 445,000 tons of rolled finished products. This brings ingot production for France and the Saar to an annual level of 8.7 million tons. Following are the latest production figures in thousands of metric tons:

	Pig Iron	Steel	Rolled Finished
FRANCE			
1938*	501	518	343
1947*	407	479	336
1948			
January	458	553	409
July	607	632	426
August	608	607	371
SAAR			
August	110	118	74

* Monthly average

Studies Welsh Tinplate

London

• • • **Manufacturers and** workmen in the Welsh plate and sheet trade will jointly investigate the position of the tinplate industry. Compared with 1939, production in South Wales has fallen by roughly 30 pct, while it is believed over here that American production has increased by some 50 pct. Britain's strip mills are working to capacity but in order to catch up in any way with the demand for tinplate, more old-style mills will have to be put into operation. At the moment some 50 mills are idle because of the shortage of skilled labor.

September Output Drops

Detroit

• • • **General Motors** has produced 176,879 passenger cars and trucks in the United States and Canada during the month of September, according to company officials. This compares with an August total of 195,029.

Of the total vehicles produced by GM in September, 132,913 were passenger cars and 43,966 were trucks.